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ALBERTA RESIDENTIAL BUILDING PRODUCTS

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The views and conclusions expressed and the recommendations made in this report are entirely those of the authors and should not be construed as expressing the opinions of Alberta Municipal Affairs.

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FOREWORD

The project documented in this report received funding under the Innovative Housing Grants Program of Alberta Municipal Affairs. The Innovative Housing Grants Program is intended to encourage and assist housing research and development which will reduce housing costs, improve the quality and performance of dwelling units and subdivisions, or increase the long term viability and competitiveness of Alberta's housing industry.

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EXECUTIVE SUMMARY

This study was undertaken to identify and classify all building products utilized in wood frame residential construction in Alberta, identify and inventory Alberta manufacturers of these products, quantify Alberta production and usage, and identify potential products with further manufacturing potential in Alberta. It notes changes which have occured since a similar study was undertaken in 1985.

The study methodology was comprised of the following steps:

1. Identification of all wood frame residential construction building product types, their quantities and values.
2. Survey of all Alberta manufacturers of these products by mail with telephone follow-up.
3. Matching of domestic consumption by product against total production of that product in Alberta,
4. Review of products for which there are production surpluses and shortages, and preliminary investigation of the viability of additional production in Alberta.

Value of Residential Building Materials

Table S.1 presents a summary of the total value of consumption of products by product type (Architectural; Mechanical - Plumbing; Mechanical - Heating, Ventilation and Air Conditioning [HVAC]; and Electrical). Within each product type the dollar value of comsumption has been divided by residential construction type. The "1989" column illustrates that products used in the architectural construction of a wood frame residential unit accounted for the largest value at almost $500 million, followed by mechanical - plumbing at just over $53 million.

The study indicates that there have been large increases in the dollar value of products consumed in wood frame residential construction. In 1984, the total value of products consumed was estimated to be $126

million. This figure is estimated to be in excess of $617 million for 1989 and to exceed $695 million by the end of 1990. The study also identified substantial volitility in the industry in terms of the number of companies operating.

Manufacturers' Survey Results

A survey of Alberta manufacturers was made in order to estimate the supply of products used in wood frame residential construction in the province. While the response rate for the survey was less than ideal (121 companies returned completed questionnaires), a considerable amount of information was obtained.

Of the companies which responded to the survey, 57% had their head offices located in or north of Red Deer, and 43% were located in the southern portion of the province.

The percentage of maximum capacity at which companies were operating was examined. While some industries, notably dimension lumber and precast concrete steps, were operating relatively close to their maximum capacity (92% and 88% respectively), companies which participated in the survey were operating on average at about 41% of their maximum capacity, which is slightly higher than the level estimated in 1985.

The survey results allowed for a number of observations to be made of market locations of various products or product categories. Products that are more likely to be sold locally are windows, concrete (both ready-mix and precast), kitchen and bathroom cabinets, doors, and lumber from small-scale producers. Products that tend to be sold over a larger market area are roofing products, insulation, lumber from larger producers, and various specialty products such as vinyl baseboards, central vacuums, burglar alarm screen, etc. Also of note is that companies located in southern Alberta tend to sell more to southern Alberta, while northern Alberta companies tend to sell throughout the province.

Table S.1

Value of Consumption of Products by
Residential Unit and Alberta Totals for 1989, 1990, and 1991

Product Type and Residential Construction Type	Per Unit	Year 1989	1990	1991
Architectural				
- single det. house	$36,661	$442,992,000	$479,908,000	$461,450,000
- single att. house	32,720	26,448,000	39,672,000	39,672,000
- rowhouse	32,295	20,668,800	31,003,200	31,003,200
- walk-up apartment	16,014	2,911,860	4,367,790	4,367,790
- subtotal	--	$493,020,660	$554,950,990	$536,492,990
Mechanical - plumbing				
- single det. house	$ 3,970	$ 47,640,000	$ 51,610,000	$ 49,625,000
- single att. house	3,970	3,032,000	4,548,000	4,548,000
- rowhouse	3,970	2,425,600	3,638,400	3,638,400
- walk-up apartment	1,634	294,120	441,180	441,180
- subtotal	--	$ 53,391,720	$ 60,237,580	$ 58,252,580
Mechanical - HVAC				
- single det. house	$ 2,642	$ 31,704,000	$ 34,346,000	$ 33,025,000
- single att. house	2,642	2,113,600	3,170,400	3,170,400
- rowhouse	2,642	1,690,880	2,536,320	2,536,320
- walk-up apartment	866	155,880	233,820	233,820
- subtotal	--	$ 35,664,360	$ 40,286,540	$ 38,965,540
Electrical				
- single det. house	$ 2,389	$ 31,140,000	$ 33,735,000	$ 32,437,500
- single att. house	2,369	2,060,000	3,090,000	3,090,000
- rowhouse	2,369	1,648,000	2,472,000	2,472,000
- walk-up apartment	2,134	257,220	385,830	385,830
- subtotal	--	$ 35,105,220	$ 39,682,830	$ 38,385,330
Total		$617,181,960	$695,157,940	$672,096,440

For the most part, products which are exported across international borders are dimension lumber, asphalt roofing products, and specialty products such as burglar alarm bars. Products which move across provincial borders tend to cover most product categories listed in the survey, with the exception of products such as ready-mix concrete and cabinets.

A survey question on backward and forward production linkages revealed that, on average, 53% of the products were sold to contractors, about 39% to wholesalers, and about 5% to other manufacturers. The percentages do not add up to 100% as the respondents did not always account for all of the product.

Over 45 different materials or component categories were identified by manufacturers as raw materials used in the products. While the quantities of each input have not been investigated, the most frequently mentioned raw materials were nails and other hardware, dimension lumber and trees. In general, less refined components usually come from within Alberta or British Columbia, while Ontario is the usual source of such things as hardware, plastics, resins, etc. Comparison of results here with those of the 1985 study shows that some components or starting material appear to be brought in from a wider range of places. Manitoba was often mentioned as a source of components previously coming from Ontario. A wider range of components is also being brought in from British Columbia and the U.S.A.

Respondents were asked whether they planned to increase, decrease or maintain the same production levels for the specified products in the coming year. The answers to this question appear to demonstrate a fair degree of optimism in the industry, but not as much as 1985 when more planned production increased. Manufacturers indicated plans to increase production for 53% of the mentioned products, decrease production for 4%, and keep production levels the same for the remaining 43%. About 16% of the 115 companies which answered a question concerning plans to produce new products in the coming year answered affirmatively.

Manufacturers were asked what component material they would like to see more available in Alberta. The most frequently mentioned items were resins, logs, lumber and various types of hardware. They were also asked about which new products they might start manufacturing. Adhesives, trim items, specialized lumber and stone-look material were the major building products under consideration.

Production Surpluses

Table S.2 lists the products which have been identified as being produced in surplus quantities, with respect to wood frame residential construction within Alberta. While not all of these products have immediate room for export or increased export potential, the ones outlined below might.

- Reconstituted wood has been exported from Alberta for a number of years, and indications are that it will continue to be an important export and one that could expand in the future.

- Dimension lumber, similar to the reconstituted wood industry, represents a significant export industry for the province, one which, given the appropriate raw materials, may continue to generate export income for Alberta.

- Pre-formed trusses - While the export market for this product is not as significant as the one for the two previously mentioned products, there does appear to be an export trade across provincial boundaries. Despite the size and inherent high transportation costs associated with this product, Alberta may find additional export markets for pre-formed trusses in neighboring provinces and possibly states.

- Fibrous batt insulation - A significant export market already exists for this product, with Alberta production outstripping provincial demand by an estimated factor of 5 or 6. While most of the surplus product is exported to other provinces, profitable markets in the United States may open.

- Asphalt shingles - The two manufacturers of this product who responded to the survey already export a high proportion of their product to both B.C. and the U.S. Indications are that there is unused capacity within this industry and expansion at present should be limited to present capacity.

Table S.2

Selected Surplus - Residential Building Products

Product	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimates
Ready-mix concrete	462,864 m^3	500,000 m^3+	5 companies (out of 30 plus) projected 1989 production in excess of 100,000 m^3 and capacity of 590,000 m^3.
Form plywood + Sheathing material Reconstituted wood	181,000 m^2 + 4,343,000 m^2 4,524,000 m^2	6,500,000 m^2+	2 companies out of over 30 establishments identified by Statistics Canada estimated '89 production totalling 1,532,231 m^2. Furthermore, both reporting companies stated they sell over 80% of their product outside Alberta.
Dimension lumber	243,000 m^3	2,266,000 m^3+	25 companies out of 38 establishments identified by Statistics Canada estimated 1989 production to be 2,266,000 m^3.
Pre-formed trusses	451,000 units	500,000 units+	5 companies (out of 34 plus identified in the original index) projected 1989 production to be 324,100 units.

Table S.2 (continued)

Selected Surplus - Residential Building Products

Product	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimates
Fibrous batt insulation	RS1-2.1 4,032,000 batts RS1-3.5 4,060,000 batts RS 1-6 34,000 batts	45,000 tonnes	A company representative of one of two Alberta manufacturers estimated total production to be in excess of 45,000 tonnes, an amount which outstrips Alberta demand by a factor of 5 or 6.
Asphalt shingles	1,919,000 m^2	20,000,000 m^2+ (asphalt roofing products)	One of two surveyed companies, both of similar size, intends to produce 15,000,000 m^2 of asphalt roofing products in 1989. Given this, one can safely assume a surplus of asphalt shingles exists.
Windows	120,000 units	177,000 units+	Based on 10 responding window manufacturers' (all material types) estimates for 1989 production.

Production Supply Shortages

Table S.3 lists selected products used in the wood frame residential construction industry which the survey and related analysis suggested are not being produced in Alberta in adequate quantities to meet provincial demand. Mentioned below are the areas in which manufacturing potential may exist.

- Paint - Based on the 1984 production levels of a single firm identified in the 1985 study which did not participate in this study, it is likely that a provincial supply shortage still exists. As most of the raw materials required to manufacture paint products are available in Alberta, this industry may contain some growth potential.

- Ceramic tile - The demand for ceramic tile in the wood frame residential construction alone amounted to $2.7 million or 122,000 m^2 in 1989. Although one tile producer is known to exist in Alberta, most product is imported. While this industry has traditionally been labor intensive, other inputs such as high quality sand and clay and a reasonably priced, abundant energy source do exist in Alberta. The possibility of developing a viable industry may exist.

- Glass - Although windows are manufactured in Alberta, most of the glass sold within the province is imported from central Canada or the U.S.A. Both the high-quality sands and inexpensive energy sources required to produce glass do exist in Alberta. While conventional glass manufacturing is very capital intensive and manufacturing plants need to be located close to large markets due to high freight costs, the possibility of developing a specialty or small-scale glass industry may exist within Alberta

Conclusion

Alberta's competitive advantages usually lie in the resource sector, with its limitations coming from the fact it is geographically removed from the large-size markets. Consequently, in areas where Alberta does

Table S.3

Residential Building Shortage Products

Product or Product Group	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimate
Form ties	9,637,000 units	0	No indication that they are manufactured in Alberta.
Nails	1,641,000 kg.	0	No indication that they are manufactured in Alberta.
Anchor bolts	643,000 units	0	No indication that they are manufactured in Alberta.
Aluminum siding	169,000 m^2	0	No indication that it is manufactured in Alberta.
Vinyl siding	870,000 m^2	--	One manufacturer was identified in the last study; however, it did not participate in the survey this year.
Tile	122,000 m^2	--	One manufacturer was identified in the last study; however, it did not participate in the survey this year.
Carpet	1,516,000 m^2	0	No indication that any is manufactured in Alberta.
Paint	1,486,000 l	--	One manufacturer was identified in the last study; however, it did not participate in the survey this year.
Hardware	Not identified separately	--	Although Statistics Canada information indicates 34 "basic hardware" manufacturers existed in 1986, none responded to the survey.

Table S.3 (continued)

Residential Building Shortage Products

Product or Product Group	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimate
Mechanical - Plumbing	$53,391,000 worth	--	With the exception of a couple of bathtub and septic tank manufacturers and a polyethylene pipe and shower base manufacturer, little else is manufactured in Alberta.
Mechanical - HVAC	$35,664,000 worth	--	Few manufacturers in the province; none that participated in the survey.
Electrical	$35,105,000 worth	--	With the exception of some electrical boxes, very little else is manufactured in Alberta.

not already have an obvious resource-based competitive advantage, additional production depends upon local development of new and better products or production processes.

1.0 INTRODUCTION

1.1 Background

This study is an updated version of a similar study carried out by HLA CONSULTANTS in the summer of 1985. By examining both the supply and demand sides of the wood frame residential construction products industry in Alberta, both shortages and surpluses of various products are identified. This information may then be used to identify potential business opportunities either by replacing products which are presently imported into the province, or by taking advantage of competitive advantages which exist in Alberta.

The study examines products that may be used in residential wood frame construction built under Part 9 of the Building Code exclusive of land development. Products are examined with respect to their significance in terms of quantity employed, their value, changes in consumption over time, and the source of products.

1.2 Statement of Objectives

The primary objective of this study is to identify, classify and project the value of all building products utilized in wood frame residential construction in Alberta and to identify and inventory Alberta manufacturers of these products. The objectives are as follows:

- to review and classify all wood frame residential construction building materials;
- to review the quantities and values by category of the products utilized in residential construction in Alberta;
- to estimate the value of product categories, on a unit basis and the annual total, used in residential construction in Alberta;
- to identify and inventory the Alberta manufacturers of residential construction materials;

- to determine, by product types and categories, the total amount produced in Alberta;
- to identify quantities and values of products that are imported and, as the data permits, to identify the major sources of imports;
- to provide preliminary indications, as data permits, on the perceived viability of some products being manufactured in Alberta that are not now; and
- to map and display the data in a manner that is conducive to ready analysis and interpretation.

1.3 Methodology

The first step was to identify the building products used in wood frame residential construction. This task was performed by a firm of architects who referred to plans of a typical house and a 24-unit apartment buildings referred in Alberta Municipal Affairs, 1988 Alberta House Cost Comparison Study to get an indication of the type of products that would be used in their construction. As this study was intended to cover the most representative units, the architects made certain adjustments to the plans to produce lists which reflect the main types of housing units felt by the architects to be representative with respect to both size and construction techniques. Following this, the architects determined the quantities of the various products and product types that would be used to complete various types of wood framed residential structures: single detached house, single attached house, row house and walk-up apartment.

In order to adjust the house plan for the single attached and row houses, the garage and driveway were removed, as well as other items related to the removal of either one or two exterior walls. The plans of the 24-unit apartment building served as the basis in determining the quantities of product used in constructing the average-size unit located in a walk-up apartment building. Prices of the identified

products were then determined by contacting over 50 building-product wholesale firms.

Having collected this information, it was possible to estimate the cost of materials to build each of the structures. Furthermore, by using building-start projections, total demand for the identified products could be estimated for 1989 through 1991.

Using the index developed for the 1985 study, along with a number of more current indexes, a master list of Alberta residential building product manufacturers was produced. All firms appearing in this index were then sent a questionnaire inquiring about their production levels and operational particulars. The forthcoming information was then entered into the computer for further analysis and cross-tabulation.

Other product supply information was obtained from Statistics Canada and other government agencies. While this information was dated and often incompatible with the structure of this study, it served to fill in a number of data gaps which existed as well as provide an indication of how representative the company survey results were.

Finally, the supply and demand information was amalgamated to produce an indication of where product surpluses and shortages exist. These surpluses and shortages were then examined further to determine if and where further business opportunities may exist in Alberta.

2.0 RESIDENTIAL BUILDING CONSTRUCTION MATERIALS

This section identifies and classifies building products employed in residential wood frame construction. Methods used to identify building product categories, types, quantities, values and major assumptions are outlined below.

2.1 Identification of Product Categories and Types

Building materials were identified with reference to Residential Standards Canada[1] and the Alberta Building Code.[2] The major components of wood frame residential buildings were examined generally in the order of their use in the building process.

The report categorizes products as standard or, in other words, the dominant current practice, or as an alternate product with significant usage that can fulfill the same purpose as the standard material. Housing units were based on those from the Alberta Municipal Affairs 1988 Alberta House Cost Comparison Study to allow for future cross-reference. Any changes made were minimal and designed to make the plans more representative.

2.2 Quantity of Materials Used in Construction

Quantities and values of materials required to fulfil the purpose of each product category used in wood frame residential building units were determined on a per-dwelling-unit basis. The total quantity and cost per item of the building product categories used in typical three-bedroom single-family dwellings (single detached, single attached, and row) and in a 24-unit walk-up apartment building in Alberta have been calculated for 1989 and presented in tabular form.

---

[1]Canada National Research Council, Associate Committee on the National Building Code, Residential Standards Canada, 1985.

[2]Alberta Department of Labour, Standards Branch, Alberta Building Code, 1985.

There appear to be five major factors influencing the quantity of materials used in a particular housing unit:

- type of building (apartment, single-family house, etc.);
- size (i.e., floor area and building volume);
- cross-sectional configuration (e.g., 1 or 2 stories, split level, etc.);
- plan configuration (e.g., L-shaped plan vs. rectangular plan); and
- style.

Of the five factors, type of building appears to have the most influence, since it prescribes, by code or construction factors, the selection of basic materials to be used.

Size has considerable influence since it most directly affects the quantities of each material used.

Cross-sectional configuration has less influence since it generally affects only the quantities of some materials used, while the quantities of the others remain more or less unchanged.

Plan configuration can have significant effect on amount of materials used, due to use of non-standard dimensions in design. Since most building products are manufactured in standard modular sizes, a house design that involves non-standard dimensions, such as an irregular plan, significantly increases material use.

A fifth factor, style, appears to affect mostly the selection of a material within a range of options rather than the overall quantity of materials to be used.

Product quantities were determined by measurement of the standard plans for the single detached house and apartment and by appropriate modifications to the "standard" house plan for the single attached and row house.

2.3 Value of Residential Construction Materials

Unit prices were determined through a survey of over 100 wholesale firms supplying the contractor market. Responses were received from 50% of the firms contacted.

Once the product unit values were obtained, the total value of that product going into the construction of the buildings was estimated through material take-off from standard drawings, adjusting for the different structures where appropriate. The total quantity utilized and value of all the building product categories were calculated by estimating the frequency that various product types are used to fulfil the purpose of product categories. The estimates are based on a variety of assumptions. They include factors such as price ranges, quantity variations and description of the average dwelling.

2.4 Major Assumptions

Product categories and materials were selected with reference to Residential Standards Canada and the Alberta Building Code and product types previously identified in housing unit models derived from those used in the Alberta Municipal Affairs in the House Cost Comparison Study.

The data limitations are mainly related to the quantification and valuation of product types on a per-unit basis as well as on a provincial basis. Limitations are as follows:

1. The "standard" house and apartment are estimates based on a broad range of housing characteristics. There is no statistical data which can lead to a precise definition. In order to make the "standard" house and apartment plans more representative of average construction practices, the architects, on the basis of their experience and knowledge of the industry, made minor adjustments to the plans, making them more consistent with current building practices.

2. There is no statistical data on the average sizes or characteristics of the various types of wood framed residential units identified. Consequently, estimates on product usage for all four types of housing are based on the plans of the "standard" three-bedroom (single detached) house and 24-unit apartment building, adjusted to reflect average practices. Adjustment for the single attached and row houses entailed the removal of the garage and driveway as well as the products associated with the loss of one or two exterior walls.

3. Not all the basic building products identified are utilized in any one particular housing unit.

4. The amount of material used in constructing a house varies from tradesman to tradesman. Some tradesmen would rather waste materials in a procedure that significantly reduces worktime and labour costs.

5. The types of material used in constructing a housing unit vary. The consumption of total base materials and alternate optional materials can only be estimated.

6. Suppliers do not have one wholesale price. They vary their prices depending on how much the contractor is buying, how big the contractor is, and past relationships between contractor and supplier. The prices quoted represent a fair price for contractors who produce approximately 10 housing units per year. Price includes delivery within 20 kilometers of the supplier.

2.5 Data Presentation

Tables 2.1, 2.3 and 2.5 present the category number, building product description, unit of measure, unit price and total value per housing unit for each product used in the construction of the representative single detached, single attached and row houses, respectively. Table 2.7 presents similar information for an apartment unit within the

representative apartment building except that an additional column has been added to relay the total quantity of product used for the entire building. Tables 2.2, 2.4 and 2.6 relate, in a similar manner as the other tables, the cost information regarding the significant alternative products which may be used in house construction.

Materials have been listed in a format similar to the file system used by Sweet's Canadian Construction Catalogue.[3]

Tables 2.8 through 2.11 present estimates of the demand for and value of products used in the construction of the four identified forms of wood frame residential construction for 1989 through 1991. The quantity figures per unit are based on those presented in Tables 2.1 through 2.7. Where a significant alternative product may be used, an architect's estimation of the proportion of housing units using that alternative is indicated and included in the calculation. The housing start figures were based on information provided by the Market and Economic Analysis section of Alberta Municipal Affairs, Housing Division, Planning Secretariat, and were produced September, 1989. These projections, however, were limited to two categories: single (i.e., single detached) and multiple household units (i.e., row, single attached, walk-up and high rise apartments). The latter figure was broken down into the appropriate residential construction figures by extrapolating the 1988-89 historical proportions for the various types of multi-household units and applying them to the projections. The historical data were obtained from the Alberta Municipal Affairs, Housing Division, publication "Residential Construction in Alberta" (see Table 2.0 for projections).

It should be noted that in some cases a particular brand name has been specified in the tables. This has been done only to reference the specific type of product or quality likely to be used in construction and should not be construed as an endorsement of these brands.

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[3]Sweet's Catalogue Services, Canadian Construction Catalogue File, SSN 0082-0341, McGraw-Hill Information Systems, Ontario, 1989.

Table 2.0

Wood Frame Residential Construction
Starts Projected for 1989 through 1991

Type of Residential Construction	Year		
	1989	1990	1991
Single detached	12,000	13,000	12,500
Single attached	800	1,200	1,200
Row house	640	960	960
Walk-up apartment	180	270	270
TOTAL	13,620	15,430	14,930

Table 2.1

Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
1	**FOUNDATION**					
1.1	**CONCRETE FOUNDATION**					
	20 Mpa Concrete - footings & fdn walls	m3	19	$85.00	$1,615.00	
	20 Mpa Concrete - grade beams	m3	1	$85.00	$85.00	
	300mm dia. reinf. poured conc. piles	item	21	$31.40	$659.40	
	150mm compacted sand	m3	25	$6.60	$165.00	
	6 mil vapour barrier	m2	164	$0.32	$52.48	
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	$573.30	
	100mm conc, garage, sidewalk & driveway	m2	74	$9.25	$684.50	
	Form plywood 19mm spruce	m2	14	$20.00	$280.00	
	38x89 spruce whalers etc.	item	225	$0.29	$65.25	
	Form ties	item	750	$0.15	$112.50	
	Nails .89 coated	kg	2.5	$1.34	$3.35	
	Reinforcing steel bars 15mm	m	350	$0.98	$343.00	
	Welded mesh reinforcing	m2	120	$0.96	$115.20	
	Anchor bolts	item	50	$0.38	$19.00	
	4 mil Polyethylene protective sheet	m2	120	$0.23	$27.60	
	SUBTOTAL					$4,800.58
	FIREPLACE					
	c/w dual metal const extensions & elbows, cap, hearth, & lam. cedar mantel	item	1	$1,148.50	$1,148.50	
	100mm clay brick veneer	m2	9	$43.50	$391.50	
	SUBTOTAL					$1,540.00
2	**DAMPPROOFING**					
2.1	Asphalt emulsion	litre	36	$1.35	$48.60	
2.2	100mm Weeping tile	m	45	$3.86	$173.70	
	150mm crushed gravel	m3	25	$7.13	$178.25	
	SUBTOTAL					$400.55

Table 2.1 (Continued)
Building Material Costs for Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
4	**ENTRY STEPS**					
	Precast conc steps 2 risers	item	1	$217.00	$217.00	
	Precast concrete brackets	item	1	$87.00	$87.00	
	SUBTOTAL					$304.00
5	**ROUGH CARPENTRY**					
5.1	**DIMENSION LUMBER**					
	38X89 spruce	1000 bf	2.561	$294.00	$752.93	
	38X140 spruce	1000 bf	2.788	$309.00	$861.49	
	38X235 spruce	1000 bf	2.105	$549.00	$1,155.65	
	38X38 spruce	1000 bf	0.12	$369.00	$44.28	
	19X140 spruce	1000 bf	0.036	$650.00	$23.40	
	SUBTOTAL					$2,837.75
5.2	**SHEATHING MATERIAL**					
	15.9mm T&G fir (floor)	m2	110	$6.45	$709.50	
	12.7mm spruce plywood (roof)	m2	180	$4.36	$784.80	
	8mm wafer board (walls)	m2	150	$2.68	$402.00	
	SUBTOTAL					$1,896.30
5.3	**ADJ. STEEL POSTS**	item	2	$32.99	$65.98	$65.98
5.5	**PREMFD WOOD TRUSSES**	item	34	$45.00	$1,530.00	$1,530.00
5.2.7	**NAILS**					
	51mm phosphate coated	kg	20	$2.21	$44.20	
	63.5mm phosphate coated	kg	10	$1.41	$14.10	
	89mm phosphate coated	kg	51	$1.34	$68.34	
	51mm hot dipped galv	kg	1	$2.05	$2.05	
	25mm annular	kg	1	$1.73	$1.73	
	SUBTOTAL					$130.42

Table 2.1 (Continued)
Building Material Costs for Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
5.7	**CEDAR DECK**					
	89x89 presure treated posts	m	1.2	1.93	2.32	
	38x184 presure treated joists	m	31.1	2.36	73.4	
	38x89 cedar decking	m	91	1.37	124.67	
	Cedar guard & handrail					
	-38x140 top rail	m	14.4	2.65	38.16	
	-38x 89 bottom rail	m	14.4	1.37	19.73	
	-38x38 vertical rails	m	140	$1.05	$147.00	
	SUBTOTAL					$405.28
5.8	**CONSTRUCTION ADHESIVE**	litre	20	$7.25	$145.00	$145.00
5.9	**SHEATHING SCREWS**	item	2600	$0.03	$78.00	$78.00
5.11	**WOOD STAIR**	risers	23	$17.30	$397.90	$397.90
6	**ROOFING**					
	Asphalt shingles @ 32SF/bundle	bundles	61	$9.79	$597.19	
	Black bldg felt #15	m2	180	$0.27	$48.60	
	Roofing nails	kg	20	$2.30	$46.00	
	Tab down cement	litre	10	$1.35	$13.50	
	SUBTOTAL					$705.29
6.4	**FLASHING**					
	Alum prefin flashing	m	72	$2.27	$163.44	$163.44
6.5	**EAVESTROUGHS & DOWNSPOUTS**					
	Alum eavestroughs	m	72	$2.42	$174.24	
	Alum prefin end caps	units	4	$0.35	$1.40	
	Alum prefin out drops	units	7	$0.70	$4.90	
	Alum prefin elbows	units	14	$1.25	$17.50	
	Alum prefin downspouts	m	35	$2.42	$84.70	
	Alum ferrules	units	72	$0.20	$14.40	
	SUBTOTAL					$297.14

Table 2.1 (Continued)
Building Material Costs for Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
7	**WINDOWS**					
	Window - wood frame, alum sash, D/G horiz slider 1300x900mm	unit	2	$245.00	$490.00	
	Window - wood frame, alum sash, D/G horiz slider 1500x900mm	unit	2	$268.00	$536.00	
	Window - wood frame, alum sash, D/G slider 1200x900mm	unit	4	$235.00	$940.00	
	Window - wood frame, alum clad, 2400x1700mm fixed	unit	1	$380.00	$380.00	
	SUBTOTAL					$2,346.00
8	**INSULATION & VAPOUR BARRIER**					
8.1	6 mil Polyethylene sheeting	m2	325	$0.23	$74.75	
	Fibrous batt insulation:					
	RSI-2.1	batts	300	$1.91	$573.00	
	RSI-3.5	batts	300	$1.98	$594.00	
8.6	Treated cellulose RSI-6 (attic)	m3	30	$17.63	$528.90	
	SUBTOTAL					$1,770.65
9	**EXTERIOR FINISHES**					
9.1	**PARGING - Exterior Basement**					
	Parging wall above grade	m3	1	$80.00	$80.00	
	Galvanized wire mesh 50x50	m2	20	$0.96	$19.20	
	Nails 30mm galv roofing	kg	5	$1.73	$8.65	
	SUBTOTAL					$107.85
9.5	**BRICKWORK - Front facade only**					
	100 Brick veneer facing	m2	44	$43.50	$1,914.00	
	Mortar c/w colorant	m3	1	$128.00	$128.00	
	Galvanized ties	item	2842	$0.04	$99.47	
	Steel Lintels	m	15	$9.00	$135.00	
	Weep Vents	item	21	$0.32	$6.72	

Table 2.1 (Continued)

Building Material Costs for Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Black building paper #15	m2	44	$0.27	$11.88	
	SUBTOTAL					$2,295.07
	VINYL SIDING					
	Alum prefinished fascia	m	72	$1.82	$131.04	
	Nails	kg	3	$9.00	$27.00	
	Vented alum panels 406mm exposed face	m	44	$3.35	$147.40	
	100mm vinyl siding	m2	136	$9.42	$1,281.12	
	Black building paper #15	m2	136	$0.27	$36.72	
	SUBTOTAL					$1,623.28
9.9	Acrylic sealant caulking (300ml)	tubes	30	$3.90	$117.00	$117.00
10	**EXTERIOR DOORS & FRAMES**					
10.10	Insulated metal door & wood frame	item	1	$295.00	$295.00	
10.1	Aluminum storm door	item	1	$250.00	$250.00	
10.11	Patio door 1800x2100	item	1	$685.00	$685.00	
10.6	Weatherstripping Threshold	m	1	$5.20	$5.20	
10.6	Weatherstrip door perimeter	m	6	$5.40	$32.40	
10.10	Sectional o/h garage door 4860x2130mm	item	1	$555.00	$555.00	
	Uninsulated metal door to garage	item	1	$100.00	$100.00	
	SUBTOTAL					$1,922.60
11	**INTERIOR WALL/CEILING FINISHES**					
11.1	Drywall					
	Gypsum board 12.7mm	m2	580	$1.95	$1,131.00	
	Drywall tape	m	1400	$0.03	$35.00	
	Corner bead	m	60	$0.40	$24.00	
	Joint filler	kg	150	$0.60	$90.00	
	Ceiling texture spray	kg	50	$0.70	$35.00	
	Drywall screws	items	4680	$0.03	$140.40	
	SUBTOTAL					$1,455.40

Table 2.1 (Continued)

Building Material Costs for Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
11.6	**TILE**					
	Ceramic tile	m2	9	$22.60	$203.40	
	Tile adhesive	litre	8	$5.20	$41.60	
	Grout	kg	3	$3.08	$9.24	
	Silicone sealant	tube	1	$5.00	$5.00	
	6.3mm particle board for ceramic tile flr	m2	22	$5.27	$115.94	
	SUBTOTAL					$375.18
12	**FLOORING**					
12.1	**CARPET**					
	Carpet, 32 oz. 100% nylon	m2	112	$17.93	$2,008.16	
	Foam underpad 6mm	m2	112	$3.58	$400.96	
	Carpet grippers	m	160	$0.33	$52.80	
	SUBTOTAL					$2,461.92
12.3	**RESILIENT FLOORING**					
	Sheet vinyl flooring - Kit/Bath/Din Rm	m2	47	$11.95	$561.65	
	Flooring adhesive	litre	5	$4.17	$20.85	
	SUBTOTAL					$582.50
13	**PAINTING - Exterior 2 coats**					
	Enamel windows, doors, trim	litre	2	$10.00	$20.00	
	Paint garage door & frame	litre	4	$10.00	$40.00	
	Stain finish cedar decking	litre	2	$7.00	$14.00	
	Stain finish rail	litre	5	$7.00	$35.00	
	PAINTING - Interior 2 coats					
	Enamel windows, doors, trim	litre	8	$10.00	$80.00	
	Semigloss or flat latex to drywall	litre	64	$9.00	$576.00	
	Stain finish doors & frames	litre	10	$9.00	$90.00	
	Stain finish bifold doors & frames	litre	2	$7.00	$14.00	
	Semigloss baseboards & shelves	litre	10	$10.00	$100.00	
	Stain finish handrails	litre	1	$7.00	$7.00	
	Stain finish balustrade	litre	1	$7.00	$7.00	

Table 2.1 (Continued)

Building Material Costs for Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	SUBTOTAL					$983.00
14	MILLWORK					
14.1	Int hollow core wood doors, wood frames					
	2032x711mm	item	3	$68.00	$204.00	
	2032x762mm	item	6	$68.00	$408.00	
	SUBTOTAL					$612.00
14.3	CLOSET DOORS - wood bifolds c/w hardware					
	2032x610mm	item	8	$36.00	$288.00	
	2032x750mm	item	2	$38.40	$76.80	
	2032x914mm	item	2	$40.50	$81.00	
	SUBTOTAL					$445.80
14.6	WINDOW/DOOR TRIM					
	Unfin wood casing 12.7x50mm	m	126	$0.74	$93.24	$93.24
14.7	BASEBOARD					
	Unfin wood baseboard 12.7x70mm	m	227	$0.82	$186.14	$186.14
14.8	BATHROOM VANITIES					
	Wood cabinet & countertop	m	2.7	$278.85	$752.90	$752.90
14.9	KITCHEN CUPBOARDS					
	Lower cupboards	m	4	$297.00	$1,188.00	
	Upper cupboards	m	4	$150.00	$600.00	
	Range hood	item	1	$84.00	$84.00	
	SUBTOTAL					$1,872.00
14.10	CUPBOARD & CLOSET SHELVES					
	Plywood c/w hardwood nosing	m	13.9	$11.20	$155.68	$155.68

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
14.11	**CLOTHES ROD - Closets**					
	Chrome plated rod 25mm diam	m	21	$5.10	$107.10	$107.10
15	**HARDWARE**					
15.1	Entry lockset, house	item	2	$29.99	$59.98	
15.3	Privacy lockset, house	item	7	$23.29	$163.03	
15.4	Passage latchset, house	item	3	$15.56	$46.68	
15.7	Door stop	item	8	$1.09	$8.72	
	Security deadbolt	item	1	$16.50	$16.50	
	Mailbox	item	1	$14.00	$14.00	
	House numbers	item	5	$7.00	$35.00	
	SUBTOTAL					$343.91
16	**BATHROOM ACCESSORIES**					
16.1	Toilet paper holder, chrome	item	3	$6.80	$20.40	
16.2	Towel bar chrome 610mm	item	3	$8.80	$26.40	
16.3	Mirror c/w clips 6x12x900mm	item	3	$20.00	$60.00	
16.7	Soap dish & grab, metal	item	2	$9.60	$19.20	
16.8	Medicine cabinet	item	3	$65.00	$195.00	
16.9	Robe hook, chrome	item	3	$2.60	$7.80	
	25mm diam. metal shower curtain rod	item	2	$12.80	$25.60	
	SUBTOTAL					$354.40
	SUBTOTAL, Architectural					$36,661.25

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
20	**PLUMBING -House**						
20.8	**DRAINS, WASTES, VENTS - Upper/Main Floor**						
	ABS PLASTIC PIPE TYPE ONE						
	Y's or Ty's ABS	100mm	item	4	$9.48	$37.92	
	Y's or Ty's ABS	75mm	item	5	$3.99	$19.95	
	Y's or Ty's ABS	50mm	item	1	$2.10	$2.10	
	Y's or Ty's ABS	40mm	item	3	$1.13	$3.39	
	Ells, 90 or 45 deg	100mm	item	6	$6.66	$39.96	
	Ells, 90 or 45 deg	75mm	item	4	$3.32	$13.28	
	Ells, 90 or 45 deg	50mm	item	6	$1.41	$8.46	
	Ells, 90 or 45 deg	40mm	item	11	$0.88	$9.68	
	Couplings - ABS	100mm	item	3	$2.66	$7.98	
	Couplings - ABS	75mm	item	3	$1.43	$4.29	
	Couplings - ABS	50mm	item	1	$0.63	$0.63	
	Couplings - ABS	40mm	item	6	$0.41	$2.46	
	Pipe ABS	100mm	metre	7.6	$3.97	$30.17	
	Pipe ABS	75mm	metre	12.6	$2.58	$32.51	
	Pipe ABS	50mm	metre	6	$1.36	$8.16	
	Pipe ABS	40mm	metre	21	$0.95	$19.95	
	Clean Outs ABS Line	100mm	item	2	$13.59	$27.18	
	Clean Outs ABS Line	50mm	item	2	$4.44	$8.88	
	Clean Outs ABS Line	40mm	item	1	$2.70	$2.70	
	Traps, ABS	100x75mm	item	1	$25.04	$25.04	
	Weeping tile c/w back water valve and c.o.	75mm	item	1	$67.91	$67.91	
	Traps, ABS	40mm	item	3	$2.37	$7.11	
	Increaser, ABS	100x75mm	item	2	$3.59	$7.18	
	Bushings, ABS	75mm	item	2	$2.20	$4.40	

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Expansion Joint ABS	75mm	item	1	$16.90	$16.90	
	Floor Flange	100x75mm	item	2	$5.87	$11.74	
	Flashing aluminum high cone	100mm	item	1	$12.73	$12.73	
	Test caps PVC	50mm	item	1	$0.76	$0.76	
	Floor drain grate, ABS	100mm	item	1	$6.28	$6.28	
	ABS cement		litre	1	$7.73	$7.73	
	ABS cleaner		litre	1	$5.74	$5.74	
	Suspension strap	20mm	metre	3	$3.29	$9.87	
	Stenco access cover	150x150mm	item	2	$9.62	$19.24	
	SUBTOTAL						**$482.28**
20.1	**WATER CLOSETS - Main Bath, Upper Floor**						
	Water closet, Crane Radcliffe		item	1	$145.98	$145.98	
	Beneke 2000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiateor G-230		item	1	$0.93	$0.93	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons copper	15mm	item	1	$0.15	$0.15	
	R19 stops	15mm	item	1	$2.44	$2.44	
	SUBTOTAL						**$157.86**
20.2	**ENAMELLED STEEL BATHROOM SINKS - Main Bath, Upper Floor**						
	Crane Coronette, white 1.306		item	1	$57.01	$57.01	
	Emco 4" centre set, 2-107		item	1	$31.64	$31.64	
	Emco pop-up drain, 2123		item	1	$17.81	$17.81	
	Flexible supplies c/w stops	30cm	set	1	$8.35	$8.35	
	Chrome P traps	25mm	item	1	$15.02	$15.02	
	SUBTOTAL						**$129.83**
20.3	**BATHTUB - Upper Floor**						
	Fibreglass tub/shower unit		Item	1	$540.00	$540.00	
	Tub filler roughing-in, Emco 2271		item	1	$38.13	$38.13	

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Tub filler trim, Emco 2270		item	1	$34.54	$34.54	
	Bath drain Emco, 2800	40mm	item	1	$27.45	$27.45	
	SUBTOTAL						$640.12
20.4	**KITCHEN - Main Floor**						
	Dbl compartment stainless steel sinks, Steel Queen QDL 203		item	1	$167.23	$167.23	
	Continuous wastes		item	1	$18.75	$18.75	
	Belanger endout contin. waste		item	1	$18.75	$18.75	
	Emco 2160 deck faucets		item	1	$38.63	$38.63	
	1-1/2 brass P traps		item	1	$14.49	$14.49	
	SUBTOTAL						$257.85
20.10	**H/W HEATER, John Wood JW402**		item	1	$307.26		$307.26
	SUBTOTAL						
20.7	**VENT PIPE**						
	Galv. Ells	75mm	item	3	$1.56	$4.68	
	Galv. pipe, 20 ga.	75mm	m	2	$3.48	$6.96	
	SUBTOTAL				$0.00		$11.64
20.8	**PIPES, FITTINGS & ACCESSORIES - Basement Level**						
	Ells, ABS	75mm	item	4	$3.32	$13.28	
	Ells, ABS	50mm	item	3	$1.41	$4.23	
	Ells, ABS	100x75mm	item	1	$8.62	$8.62	
	Ells, ABS	40mm	item	3	$0.88	$2.64	
	Y's and Ty's	100mm	item	1	$9.48	$9.48	
	Y's and Ty's	75mm	item	1	$3.99	$3.99	
	Y's and Ty's	50mm	item	1	$2.10	$2.10	
	Clean out line	50mm	item	1	$4.44	$4.44	
	Trap	40mm	item	1	$2.37	$2.37	

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Trap Adapter	40mm	item	1	$1.14	$1.14	
	Trap deep seal	75mm	item	1	$12.28	$12.28	
	Floor flange	100x75mm	item	1	$5.87	$5.87	
	Test cap	100mm	item	1	$1.40	$1.40	
	Test cap	75mm	item	1	$1.03	$1.03	
	Test cap	50mm	item	1	$0.76	$0.76	
	Pipe ABS type one	75mm	m	3	$8.46	$25.38	
	Pipe ABS type one	50mm	m	2	$4.44	$8.88	
	Pipe ABS type one	40mm	m	5	$3.11	$15.55	
	Couplings, ABS	50mm	item	1	$0.63	$0.63	
	Couplings, ABS	40mm	item	2	$0.41	$0.82	
	Cement, ABS		.5litre	1	$2.10	$2.10	
	Copper pipe type M	15mm	m	12	$2.29	$27.48	
	Couplings C x C	15mm	item	4	$0.43	$1.72	
	90 deg Ells, C x C	15mm	item	10	$0.44	$4.40	
	Tees C x C	20mm	item	2	$1.95	$3.90	
	Tees C x C	15mm	item	5	$0.81	$4.05	
	Stops C x C	15mm	item	2	$4.17	$8.34	
	Drop eared ell	15mm	item	1	$2.18	$2.18	
	Adapter, C x F	15mm	item	1	$1.17	$1.17	
	Adapter, C x M	15mm	item	2	$1.31	$2.62	
	Solder	100g	item	1	$0.69	$0.69	
	SUBTOTAL						**$183.54**
20.1	**PLUMBING FIXTURES - Basement Level**						
	Toilet Crane Radcliffe, white		item	1	$150.34	$150.34	
	Beneke 2000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiator specialty	G-230	item	1	$0.83	$0.83	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons, copper	15mm	item	1	$0.15	$0.15	
	R19 stops	15mm	item	1	$2.44	$2.44	

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	SUBTOTAL						$162.12
20.2	**ENAMELLED STEEL SINK - Basement Level**						
	Crane Coronette white, 1-306		item	1	$46.73	$46.73	
	Emco pop-up drain, 2123		item	1	$25.93	$25.93	
	Emco 4" centre set, 2-107		item	1	$14.60	$14.60	
	Flexible supplies	30cm	per pair	1	$1.96	$1.96	
	Chrome P traps	25mm	item	1	$12.31	$12.31	
	R19 stops	15mm	item	2	$2.44	$4.88	
	Shower Flat	810x810mm	item	1	$234.00	$234.00	
	Delta single lever faucet	622c	item	1	$64.86	$64.86	
	SUBTOTAL						$405.27
20.3	**BATHTUB - Basement Level**						
	Fibreglass tub/shower unit		item	1	$540.00	$540.00	
	Tub filler roughing-in, Emco 2271		item	1	$38.13	$38.13	
	Tub filler trim, Emco 2270		item	1	$34.54	$34.54	
	Bath drain Emco, 2800	40mm	item	1	$27.45	$27.45	
	SUBTOTAL						$640.12
20.4	**LAUNDRY AREA - Basement**						
	Dbl compartment vinyl laundry sink		item	1	$98.00	$98.00	
	Continuous wastes		item	1	$18.75	$18.75	
	Belanger endout contin. waste		item	1	$18.75	$18.75	
	Emco 2160 deck faucets		item	1	$38.63	$38.63	
	1-1/2 brass P traps		item	1	$14.49	$14.49	
	SUBTOTAL						$188.62
20.8	**ENSUITE BATH ROUGH-IN PLUMBING - Upper Floor**						
	Y's or TY's, ABS	75mm	item	2	$3.99	$7.98	
	Y's or TY's, ABS	50mm	item	2	$2.10	$4.20	

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	90's ABS	75mm	item	3	$3.32	$9.96	
	90's ABS	50mm	item	3	$1.41	$4.23	
	90's ABS	40mm	item	3	$0.88	$2.64	
	Line C.O,m ABS	50mm	item	1	$4.44	$4.44	
	Trap, ABS	40mm	item	1	$2.37	$2.37	
	Trap adapter	40mm	item	1	$1.14	$1.14	
	Floor Flange	75mm	item	1	$5.87	$5.87	
	Pipe ABS type one	75mm	m	3	$8.46	$25.38	
	Pipe ABS type one	50mm	m	2	$4.44	$8.88	
	Pipe ABS type one	40mm	m	5	$3.11	$15.55	
	Couplings, ABS	75mm	item	1	$1.43	$1.43	
	Couplings, ABS	50mm	item	1	$0.63	$0.63	
	Couplings, ABS	40mm	item	2	$0.41	$0.82	
	Suspension strap	20mm	m	1	$1.29	$1.29	
	Cement	1/4L	item	1	$1.05	$1.05	
	SUBTOTAL						$97.86
20.8	**WATER LINES - Ensuite Bath, Upper Level**						
	90 deg, Ell's, CxC	15mm	item	8	$0.44	$3.52	
	Tee's, C x C	20mm	item	2	$1.95	$3.90	
	Tee's, C x C	15mm	item	1	$0.81	$0.81	
	Couplings, C x C	15mm	item	4	$0.43	$1.72	
	Pipe copper, type M	15	m	9	$2.98	$26.82	
	SUBTOTAL						$36.77
	PLUMBING FIXTURES - Ensuite Bath, Upper Level						
20.1	Water Closets Crane Radcliffe white		item	1	$145.98	$145.98	
	Beneke 2,000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiator, specialty, G-230		item	1	$0.83	$0.83	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons copper	15mm	item	1	$0.15	$0.15	

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	R19 stops	15mm	item	1	$2.44	$2.44	
	SUBTOTAL						$157.76
	ENAMELLED STEEL LAVATORY - Ensuite Bath, Upper Level						
20.2	Crane Coronette, white, 1-306		item	1	$46.73	$46.73	
	Emco 4" center set, 2-107		item	1	$25.93	$25.93	
	Emco pop-up drain, 2123		item	1	$14.60	$14.60	
	Flexible supplies	30cm	item	1	$1.96	$1.96	
	Chrome P traps	25mm	item	1	$12.31	$12.31	
	R19 stops	15mm	item	2	$4.88	$9.76	
	SUBTOTAL						$111.29
	SUBTOTAL, plumbing per house						$3,970.19

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT #	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
21	**HVAC -House**					
21.1	**HEATING & VENTILATION** Valve assembly	Item	1	$130.00	$130.00	$130.00
21.2	**FORCED AIR FURNACE** Conventional Gas Fired Hot Air Furnace	Item	1	$767.00	$767.00	$767.00
21.3	**DUCTING** Galvanized Sheet Metal Duct	m	1	$877.50	$877.50	$877.50
21.4	**THERMOSTAT**	Item	1	$19.50	$19.50	$19.50
21.5	**HUMIDIFIER**	Item	1	$113.75	$113.75	$113.75
21.9	**FLEXIBLE DUCTING**	Item	3	$11.38	$34.14	$34.14
21.10	**DUCT INSULATION**	m	9.5	$21.55	$204.73	$204.73
21.13	**FANS** Bathroom Fan and Duct Range Hood Fan and Duct	Item Item	2 1	$78.00 $162.50	$156.00 $162.50	$318.50
21.15	**METAL CHIMNEY/VENT SYSTEM**	Item	1	$255.13	$255.13	$255.13
	SUBTOTAL, HVAC per house					$2,720.25

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
22	**ELECTRICAL**					
22.1	**EXTERIOR service items**					
	25.4mm Weatherhead	100	0.01	$495.80	$4.96	
	Cleves	100	0.01	$580.00	$5.80	
	Meter base	100	0.01	$43.00	$0.43	$11.19
22.2	**CONDUIT 1.25 Emt**	100m	0.02	$80.20	$1.60	$1.60
22.3	**MAIN SWITCH & Breaker Box**					
	25.4mm Emt connectors	100	0.04	$85.28	$3.41	
	100 amp 32 circuit panel	item	1	$67.24	$67.24	
	#6 Bare copper wire	100m	0.06	$160.70	$9.64	
	Screws #8x25mm	100	0.4	$3.83	$1.53	
						$81.83
22.4	**ELEC. CIRCUIT BREAKERS**					
	15 amp Single pole breakers	item	5	$4.88	$24.40	
	15 amp Double pole breakers	item	2	$10.77	$21.54	
	15 amp Ground fault breakers	item	2	$53.50	$107.00	
	40 amp Double pole breakers	item	1	$42.50	$42.50	
	30 amp Double pole breakers	item	1	$42.50	$42.50	
						$237.94
22.5	**INSULATED WIRE**					
	#3x-Link, copper wire	m	17.4	$5.77	$100.40	
	9.5 flex	m	6	$12.00	$72.00	
	12.7mm cable straps	100	0.24	$22.05	$5.29	
	25.4 m Cable Straps	100	0.04	$45.15	$1.81	
	Cable Straps	100	1.4	$2.50	$3.50	
	20/20 Connectors	100	0.2	$16.00	$3.20	
	Range Cable Connector	100	0.04	$105.10	$4.20	
	Ground Clamp	100	0.01	$170.57	$1.71	
	9.5mm Flex Connectors	100	0.03	$37.95	$1.14	
	Marr Connectors	item	60	$0.25	$15.00	

Table 2.1 (Continued)
Building Material Costs For Single Detached House

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	2-14 Insulated Copper Wire	m	336	$1.19	$399.84	
	3-14 Insulated Copper Wire	m	61	$1.99	$121.39	
	3-8 Insulated Copper Wire	m	76	$7.02	$533.52	
	3-10 Insulated Copper Wire	m	46	$4.11	$189.06	
						$1,452.05
22.6	JUNCTION & OUTLET BOXES					
	1104 Switch Boxes	100	0.39	$161.80	$63.10	
	100mm Octagon Boxes	100	0.17	$205.85	$34.99	
	100mm Deep Square Boxes	100	0.03	$377.85	$11.34	
	Shallow Plaster Boxes	100	0.02	$204.60	$4.09	
	Duplex Plugs 110V	100	0.23	$92.75	$21.33	
	Duplex Plug Cover Plates	100	0.21	$29.75	$6.25	
	Water Proof Plug Covers	100	0.02	$201.25	$4.03	
	30A/220V Plug	100	0.01	$472.50	$4.73	
	40A/220V Plug	100	0.01	$472.50	$4.73	
						$154.58
22.8	Light Fixtures					
	Bedroom	item	4	$15.00	$60.00	
	Kitchen	item	1	$100.00	$100.00	
	Bathroom	item	3	$50.00	$150.00	
	Exterior	item	2	$35.00	$70.00	
	Utility	item	4	$10.00	$40.00	
	Family room	item	2	$15.00	$30.00	
						$450.00
	SUBTOTAL, Electrical - Single Detached House					$2,389.19

Table 2.1 (Continued)
Building Material Costs [illegible]r Single Detached House

SUMMARY - Single Detached House

Architectural	$36,916.25	
Mechanical - Plumbing	$3,970.19	
Mechanical - HVAC	$2,720.25	
Electrical	$2,389.19	
GRAND TOTAL		**$45,995.88**

Table 2.2
Building Material Costs for Significant Alternative
Products Used in Single Detached House Construction

CAT#	ALTERNATIVES - Single Detached House	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	ALTERNATIVE FOUNDATION					
1.2	PRESERVED WOOD FOUNDATION WALLS WITH SLAB ON GRADE					
	12.7 Press. treated wall ply	m2	90	$8.70	$783.00	
	15.9 Press. treated flr ply	m2	90	$9.30	$837.00	
	38x140 spruce - in board feet	bf	660	$0.57	$376.20	
	38x191 spruce - in board feet	bf	262	$0.57	$149.34	
	20 Mpa Concrete - grade beams	m3	1	$85.00	$85.00	
	300mm dia. reinf. poured conc. piles	item	21	$31.40	$659.40	
	150mm compacted sand	m3	25	$6.60	$165.00	
	6 mil vapour barrier	m2	164	$0.32	$52.48	
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	$573.30	
	100mm conc, garage, sidewalk & driveway	m2	74	$9.25	$684.50	
	Welded mesh reinforcing	m2	120	$0.96	$115.20	
	Hot dipped galv nails 69mm	kg	25	$1.41	$35.25	
	Hot dipped galv nails 89mm	kg	20	$1.41	$28.20	
	Hot dip galv iron strapping	item	50	$0.38	$19.00	
	Caulking/sealant	tube	26	$3.00	$78.00	
	Polyethylene sheet	m2	120	$0.23	$27.60	
	Anchors	item	50	$0.69	$34.50	
	SUBTOTAL					$4,702.97
	ALTERNATIVE ROOFING					
6.2	CEDAR SHINGLES					
	bundles for 180 m2 (1976.6 SF) @ 20SF	bundle	98	$21.00	$2,058.00	
	Black building paper #15	m2	180	$0.27	$48.60	
	Roofing nails	kg	20	$2.30	$46.00	
	SUBTOTAL					$2,152.60

Table 2.2 (Continued)
Building Material Costs for Significant Alternative
Products Used in Single Detached House Construction

CAT#	ALTERNATIVES - Single Detached House	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	ALTERNATIVE EXTERIOR FINISHES					
9.1	**STUCCO**					
	Premixed stucco & scratchcoat	m3	3	$250.00	$750.00	
	Galvanized wire mesh 50x50	m2	180	$0.96	$172.80	
	Nails, 30mm galv roofing	kg	50	$1.73	$86.50	
	Black building paper #15	m2	180	$0.27	$48.60	
	SUBTOTAL					$1,057.90
9.2	**BEVELED CLEAR CEDAR SIDING**					
	190mm exposed face - in board feet	bf	1920	$1.71	$3,283.20	
	Cedar trim boards 19x89 - in board feet	bf	40	$0.60	$24.00	
	Nails 51 galvanized	kg	7	$2.21	$15.47	
	Black building paper #15	m2	180	$0.27	$48.60	
	SUBTOTAL					$3,371.27
9.3	**ALUMINUM SIDING**					
	Siding	m2	136	$38.35	$5,215.60	
	Alum starter strip	m	40	$0.74	$29.60	
	Alum outside corner post	m	9	$2.40	$21.60	
	Alum J mold	m	48	$0.74	$35.52	
	Alum prefinished fascia	m	72	$1.82	$131.04	
	Black building paper #15	m2	180	$0.27	$48.60	
	Nails	kg	3	$9.00	$27.00	
	SUBTOTAL					$5,508.96
9.5	**BRICK**					
	100mm Brick Veneer	m2	180	$43.50	$7,830.00	
	Mortar c/w colorant	m3	3	$128.00	$384.00	
	Galvanized ties	item	11628	$0.04	$465.12	
	Steel lintels	m	16.5	$9.00	$148.50	
	Weep vents	item	83	$0.32	$26.56	
	Black building paper #15	m2	180	$0.27	$48.60	
	SUBTOTAL					$8,902.78

Table 2.3

Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
1	**FOUNDATION**					
1.1	**CONCRETE FOUNDATION**					
	20 Mpa Concrete - footings & fdn walls	m3	19	$85.00	$1,615.00	
	150mm compacted sand	m3	25	$6.60	$165.00	
	6 mil vapour barrier	m2	164	$0.32	$52.48	
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	$573.30	
	100mm conc, sidewalk & driveway	m2	10	$9.25	$92.50	
	Form plywood 19mm spruce	m2	14	$20.00	$280.00	
	38x89 spruce whalers etc.	item	225	$0.29	$65.25	
	Form ties	item	750	$0.15	$112.50	
	Nails .89 coated	kg	2.5	$1.34	$3.35	
	Reinforcing steel bars 15mm	m	175	$0.98	$171.50	
	Welded mesh reinforcing	m2	90	$0.96	$86.40	
	Anchor bolts	item	50	$0.38	$19.00	
	4 mil Polyethylene protective sheet	m2	120	$0.23	$27.60	
	SUBTOTAL					$3,263.88
	FIREPLACE					
	c/w dual metal const extensions & elbows, cap, hearth, & lam. cedar mantel	item	1	$1,148.50	$1,148.50	
	100mm clay brick veneer	m2	9	$43.50	$391.50	
	SUBTOTAL					$1,540.00
2	**DAMPPROOFING**					
2.1	Asphalt emulsion	litre	18	$1.35	$24.30	
2.2	100mm Weeping tile	m	25	$3.86	$96.50	
	150mm crushed gravel	m3	14	$7.13	$99.82	
	SUBTOTAL					$220.62

Table 2.3 (Continued)
Building Material Costs for Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
4	**ENTRY STEPS**					
	Precast conc steps 2 risers	item	1	$217.00	$217.00	
	Precast concrete brackets	item	1	$87.00	$87.00	
	SUBTOTAL					$304.00
5	**ROUGH CARPENTRY**					
5.1	**DIMENSION LUMBER**					
	38X89 spruce	1000 bf	2.561	$294.00	$752.93	
	38X140 spruce	1000 bf	2.555	$309.00	$789.50	
	38X235 spruce	1000 bf	2.105	$549.00	$1,155.65	
	38X38 spruce	1000 bf	0.12	$369.00	$44.28	
	19X140 spruce	1000 bf	0.036	$650.00	$23.40	
	SUBTOTAL					$2,765.76
5.2	**SHEATHING MATERIAL**					
	15.9mm T&G fir (floor)	m2	110	$6.45	$709.50	
	12.7mm spruce plywood (roof)	m2	90	$4.36	$392.40	
	8mm wafer board (walls)	m2	150	$2.68	$402.00	
	SUBTOTAL					$1,503.90
5.3	**ADJ. STEEL POSTS**	item	2	$32.99	$65.98	$65.98
5.5	**PREMFD WOOD TRUSSES**	item	30	$45.00	$1,350.00	$1,350.00
5.2.7	**NAILS**					
	51mm phosphate coated	kg	20	$2.21	$44.20	
	63.5mm phosphate coated	kg	10	$1.41	$14.10	
	89mm phosphate coated	kg	51	$1.34	$68.34	
	51mm hot dipped galv	kg	1	$2.05	$2.05	
	25mm annular	kg	1	$1.73	$1.73	
	SUBTOTAL					$130.42

Table 2.3 (Continued)
Building Material Costs for Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
5.7	**CEDAR DECK**					
	89x89 presure treated posts	m	1.2	$1.93	$2.32	
	38x184 presure treated joists	m	31.1	$2.36	$73.40	
	38x89 cedar decking	m	91	$1.37	$124.67	
	Cedar guard & handrail					
	-38x140 top rail	m	14.4	$2.65	$38.16	
	-38x89 bottom rail	m	14.4	$1.37	$19.73	
	-38x38 vertical rails	m	140	$1.05	$147.00	
	SUBTOTAL					$405.28
5.8	**CONSTRUCTION ADHESIVE**	litre	20	$7.25	$145.00	$145.00
5.9	**SHEATHING SCREWS**	item	2600	$0.03	$78.00	$78.00
5.11	**WOOD STAIR**	risers	23	$17.30	$397.90	$397.90
6	**ROOFING**					
	Asphalt shingles @ 32SF/bundle	bundles	52	$9.79	$509.08	
	Black bldg felt #15	m2	156	$0.27	$42.12	
	Roofing nails	kg	16	$2.30	$36.80	
	Tab down cement	litre	10	$1.35	$13.50	
	SUBTOTAL					$601.50
6.4	**FLASHING**					
	Alum prefin flashing	m	60	$2.27	$136.20	$136.20
6.5	**EAVESTROUGHS & DOWNSPOUTS**					
	Alum eavestroughs	m	36	$2.42	$87.12	
	Alum prefin end caps	units	2	$0.35	$0.70	
	Alum prefin out drops	units	7	$0.70	$4.90	
	Alum prefin elbows	units	7	$1.25	$8.75	
	Alum prefin downspouts	m	25	$2.42	$60.50	
	Alum ferrules	units	36	$0.20	$7.20	
	SUBTOTAL					$169.17

Table 2.3 (Continued)
Building Material Costs for Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
7	**WINDOWS**					
	Window - wood frame, alum sash, D/G horiz slider1300x900mm	unit	1	$245.00	$245.00	
	Window - wood frame, alum sash, D/G horiz slider 1500x900mm	unit	2	$268.00	$536.00	
	Window - wood frame, alum sash, D/G slider 1200x900mm	unit	4	$235.00	$940.00	
	Window - wood frame, alum clad, 2400x1700mm,fixed	unit	1	$580.00	$580.00	
	SUBTOTAL					$2,301.00
8	**INSULATION & VAPOUR BARRIER**					
8.1	6 mil Polyethylene sheeting	m2	325	$0.23	$74.75	
	Fibrous batt insulation:					
	RSI-2.1	batts	300	$1.91	$573.00	
	RSI-3.5	batts	300	$1.98	$594.00	
8.6	Treated cellulose RSI-6 (attic)	m3	30	$17.63	$528.90	
	SUBTOTAL					$1,770.85
9	**EXTERIOR FINISHES**					
9.1	**PARGING - Exterior Basement**					
	Parging wall above grade	m3	0.75	$80.00	$60.00	
	Galvanized wire mesh 50x50	m2	15	$0.96	$14.40	
	Nails 30mm galv roofing	kg	3.75	$1.73	$6.49	
	SUBTOTAL					$80.89
9.5	**BRICKWORK - Front facade only**					
	100 Brick veneer facing	m2	44	$43.50	$1,914.00	
	Mortar	m3	1	$128.00	$128.00	
	Galvanized ties	item	2842	$0.04	$99.47	
	Steel Lintels	m	15	$9.00	$135.00	
	Weep Vents	item	21	$0.32	$6.72	

Table 2.3 (Continued)
Building Material Costs for Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Black building paper #15	m2	44	$0.27	$11.88	
	SUBTOTAL					$2,295.07
	VINYL SIDING					
	Alum prefinished fascia	m	46.52	$1.82	$84.67	
	Nails	kg	1.98	$9.00	$17.82	
	Vented alum panels 406mm exposed face	m	29	$3.35	$97.15	
	100mm vinyl siding	m2	89.76	$9.42	$845.54	
	Black building paper #15	m2	89.76	$0.27	$24.24	
	SUBTOTAL					$1,069.41
9.9	Acrylic sealant caulking (300ml)	tubes	30	$3.90	$117.00	$117.00
10	**EXTERIOR DOORS & FRAMES**					
10.10	Insulated metal door & wood frame	item	1	$295.00	$295.00	
10.1	Aluminum storm door	item	1	$250.00	$250.00	
10.11	Patio door 1800x2100	item	1	$685.00	$685.00	
10.6	Weatherstripping Threshold	m	1	$5.20	$5.20	
10.6	Weatherstrip door perimeter	m	6	$5.40	$32.40	
	SUBTOTAL					$1,267.60
11	**INTERIOR WALL/CEILING FINISHES**					
11.1	Drywall					
	Gypsum board 12.7mm	m2	580	$1.95	$1,131.00	
	Drywall tape	m	1400	$0.03	$35.00	
	Corner bead	m	60	$0.40	$24.00	
	Joint filler	kg	150	$0.60	$90.00	
	Ceiling texture spray	kg	50	$0.70	$35.00	
	Drywall screws	items	4680	$0.03	$140.40	
	SUBTOTAL					$1,455.40
11.6	**TILE**					
	Ceramic tile	m2	9	$22.60	$203.40	
	Tile adhesive	litre	8	$5.20	$41.60	

Table 2.3 (Continued)

Building Material Costs for Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Grout	kg	3	$3.08	$9.24	
	Silicone sealant	tube	1	$5.00	$5.00	
	6.3mm particle board for ceramic tile flr	m2	22	$5.27	$115.94	
	SUBTOTAL					
12	**FLOORING**					
12.1	**CARPET**					**$375.18**
	Carpet, 32 oz. 100% nylon	m2	112	$17.93	$2,008.16	
	Foam underpad 6mm	m2	112	$3.58	$400.96	
	Carpet grippers	m	160	$0.33	$52.80	
	SUBTOTAL					
12.3	**RESILIENT FLOORING**					**$2,461.92**
	Sheet vinyl flooring - Kit/Bath/Din Rm	m2	47	$11.95	$561.65	
	Flooring adhesive	litre	5	$4.17	$20.85	
	SUBTOTAL					
13	**PAINTING - Exterior 2 coats**					**$582.50**
	Enamel windows, doors, trim	litre	2	$10.00	$20.00	
	Stain finish cedar decking	litre	2	$7.00	$14.00	
	Stain finish rail	litre	5	$7.00	$35.00	
	PAINTING - Interior 2 coats					
	Enamel windows, doors, trim	litre	8	$10.00	$80.00	
	Semigloss or flat latex to drywall	litre	64	$9.00	$576.00	
	Stain finish doors & frames	litre	10	$9.00	$90.00	
	Stain finish bifold doors & frames	litre	2	$7.00	$14.00	
	Semigloss baseboards & shelves	litre	10	$10.00	$100.00	
	Stain finish handrails	litre	1	$7.00	$7.00	
	Stain finish balustrade	litre	1	$7.00	$7.00	
	SUBTOTAL					
14	**MILLWORK**					**$943.00**
14.1	Int hollow core wood doors, wood frames 2032x711mm	item	3	$68.00	$204.00	

Table 2.3 (Continued)
Building Material Costs for Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	2032x762mm	item	6	$68.00	$408.00	
	SUBTOTAL					$612.00
14.3	**CLOSET DOORS - wood bifolds c/w hardware**					
	2032x610mm	item	8	$36.00	$288.00	
	2032x750mm	item	2	$38.40	$76.80	
	2032x914mm	item	2	$40.50	$81.00	
	SUBTOTAL					$445.80
14.6	**WINDOW/DOOR TRIM**					
	Unfin wood casing 12.7x50mm	m	126	$0.74	$93.24	$93.24
14.7	**BASEBOARD**					
	Unfin wood baseboard 12.7x70mm	m	227	$0.82	$186.14	$186.14
14.8	**BATHROOM VANITIES**					
	Wood cabinet & countertop	m	2.7	$278.85	$752.90	$752.90
14.9	**KITCHEN CUPBOARDS**					
	Lower cupboards	m	4	$297.00	$1,188.00	
	Upper cupboards	m	4	$150.00	$600.00	
	Range hood	item	1	$84.00	$84.00	
	SUBTOTAL					$1,872.00
14.10	**CUPBOARD & CLOSET SHELVES**					
	Plywood c/w hardwood nosing	m	13.9	$11.20	$155.68	$155.68
14.11	**CLOTHES ROD - Closets**					
	Chrome plated rod 25mm diam	m	21	$5.10	$107.10	$107.10
15	**HARDWARE**					
15.1	Entry lockset, house	item	2	$29.99	$59.98	
15.3	Privacy lockset, house	item	7	$23.29	$163.03	
15.4	Passage latchset, house	item	3	$15.56	$46.68	

Table 2.3 (Continued)
Building Material Costs for Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
15.7	Door stop	item	8	$1.09	$8.72	
	Security deadbolt	item	1	$16.50	$16.50	
	Mailbox	item	1	$14.00	$14.00	
	House numbers	item	5	$7.00	$35.00	
	SUBTOTAL					$343.91
16	BATHROOM ACCESSORIES					
16.1	Toilet paper holder, chrome	item	3	$6.80	$20.40	
16.2	Towel bar chrome 610mm	item	3	$8.80	$26.40	
16.3	Mirror c/w clips 6x12x900mm	item	3	$20.00	$60.00	
16.7	Soap dish & grab, metal	item	2	$9.60	$19.20	
16.8	Medicine cabinet	item	3	$65.00	$195.00	
16.9	Robe hook, chrome	item	3	$2.60	$7.80	
	25mm diam. metal shower curtain rod	item	2	$12.80	$25.60	
	SUBTOTAL					$354.40
	SUBTOTAL, Architectural					$32,720.39

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
20	**PLUMBING -House**						
20.8	**DRAINS, WASTES, VENTS - Upper/Main Floor**						
	ABS PLASTIC PIPE TYPE ONE						
	Y's or Ty's ABS	100mm	item	4	$9.48	$37.92	
	Y's or Ty's ABS	75mm	item	5	$3.99	$19.95	
	Y's or Ty's ABS	50mm	item	1	$2.10	$2.10	
	Y's or Ty's ABS	40mm	item	3	$1.13	$3.39	
	Ells, 90 or 45 deg	100mm	item	6	$6.66	$39.96	
	Ells, 90 or 45 deg	75mm	item	4	$3.32	$13.28	
	Ells, 90 or 45 deg	50mm	item	6	$1.41	$8.46	
	Ells, 90 or 45 deg	40mm	item	11	$0.88	$9.68	
	Couplings - ABS	100mm	item	3	$2.66	$7.98	
	Couplings - ABS	75mm	item	3	$1.43	$4.29	
	Couplings - ABS	50mm	item	1	$0.63	$0.63	
	Couplings - ABS	40mm	item	6	$0.41	$2.46	
	Pipe ABS	100mm	metre	7.6	$3.97	$30.17	
	Pipe ABS	75mm	metre	12.6	$2.58	$32.51	
	Pipe ABS	50mm	metre	6	$1.36	$8.16	
	Pipe ABS	40mm	metre	21	$0.95	$19.95	
	Clean Outs ABS Line	100mm	item	2	$13.59	$27.18	
	Clean Outs ABS Line	50mm	item	2	$4.44	$8.88	
	Clean Outs ABS Line	40mm	item	1	$2.70	$2.70	
	Traps, ABS	100x75mm	item	1	$25.04	$25.04	
	Weeping tile c/w back water valve and c.o.	75mm	item	1	$67.91	$67.91	
	Traps, ABS	40mm	item	3	$2.37	$7.11	
	Increaser, ABS	100x75mm	item	2	$3.59	$7.18	
	Bushings, ABS	75mm	item	2	$2.20	$4.40	

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Expansion Joint ABS	75mm	item	1	$16.90	$16.90	
	Floor Flange	100x75mm	item	2	$5.87	$11.74	
	Flashing aluminum high cone	100mm	item	1	$12.73	$12.73	
	Test caps PVC	50mm	item	1	$0.76	$0.76	
	Floor drain grate, ABS	100mm	item	1	$6.28	$6.28	
	ABS cement		litre	1	$7.73	$7.73	
	ABS cleaner		litre	1	$5.74	$5.74	
	Suspension strap	20mm	metre	3	$3.29	$9.87	
	Stenco access cover	150x150mm	item	2	$9.62	$19.24	
	SUBTOTAL						$482.26
20.1	**WATER CLOSETS - Main Bath, Upper Floor**						
	Water closet, Crane Radcliffe		item	1	$145.98	$145.98	
	Beneke 2000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiateor G-230		item	1	$0.93	$0.93	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons copper	15mm	item	1	$0.15	$0.15	
	R19 stops	15mm	item	1	$2.44	$2.44	
	SUBTOTAL						$157.86
20.2	**ENAMELLED STEEL BATHROOM SINKS - Main Bath, Upper Floor**						
	Crane Coronette, white 1.306		item	1	$57.01	$57.01	
	Emco 4" centre set, 2-107		item	1	$31.64	$31.64	
	Emco pop-up drain, 2123		item	1	$17.81	$17.81	
	Flexible supplies c/w stops	30cm	set	1	$8.35	$8.35	
	Chrome P traps	25mm	item	1	$15.02	$15.02	
	SUBTOTAL						$129.83
20.3	**BATHTUB - Upper Floor**						
	Fibreglass tub/shower unit		item	1	$540.00	$540.00	
	Tub filler roughing-in, Emco 2271		item	1	$38.13	$38.13	

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Tub filler trim, Emco 2270		item	1	$34.54	$34.54	
	Bath drain Emco, 2800	40mm	item	1	$27.45	$27.45	
	SUBTOTAL						$640.12
20.4	KITCHEN - Main Floor						
	Dbl compartment stainless steel sinks, Steel Queen QDL 203		item	1	$167.23	$167.23	
	Continuous wastes		item	1	$18.75	$18.75	
	Belanger endout contin. waste		item	1	$18.75	$18.75	
	Emco 2160 deck faucets		item	1	$38.63	$38.63	
	1-1/2 brass P traps		item	1	$14.49	$14.49	
	SUBTOTAL						$257.85
20.10	H/W HEATER, John Wood JW402		item	1	$307.26		$307.26
	SUBTOTAL						
20.7	VENT PIPE						
	Galv. Ells	75mm	item	3	$1.56	$4.68	
	Galv. pipe, 20 ga.	75mm	m	2	$3.48	$6.96	
	SUBTOTAL				$0.00		$11.64
20.8	PIPES, FITTINGS & ACCESSORIES - Basement Level						
	Ells, ABS	75mm	item	4	$3.32	$13.28	
	Ells, ABS	50mm	item	3	$1.41	$4.23	
	Ells, ABS	100x75mm	item	1	$8.62	$8.62	
	Ells, ABS	40mm	item	3	$0.88	$2.64	
	Y's and Ty's	100mm	item	1	$9.48	$9.48	
	Y's and Ty's	75mm	item	1	$3.99	$3.99	
	Y's and Ty's	50mm	item	1	$2.10	$2.10	
	Clean out line	50mm	item	1	$4.44	$4.44	
	Trap	40mm	item	1	$2.37	$2.37	

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Trap Adapter	40mm	item	1	$1.14	$1.14	
	Trap deep seal	75mm	item	1	$12.28	$12.28	
	Floor flange	100x75mm	item	1	$5.87	$5.87	
	Test cap	100mm	item	1	$1.40	$1.40	
	Test cap	75mm	item	1	$1.03	$1.03	
	Test cap	50mm	item	1	$0.76	$0.76	
	Pipe ABS type one	75mm	m	3	$8.46	$25.38	
	Pipe ABS type one	50mm	m	2	$4.44	$8.88	
	Pipe ABS type one	40mm	m	5	$3.11	$15.55	
	Couplings, ABS	50mm	item	1	$0.63	$0.63	
	Couplings, ABS	40mm	item	2	$0.41	$0.82	
	Cement, ABS		.5litre	1	$2.10	$2.10	
	Copper pipe type M	15mm	m	12	$2.29	$27.48	
	Couplings C x C	15mm	item	4	$0.43	$1.72	
	90 deg Ells, C x C	15mm	item	10	$0.44	$4.40	
	Tees C x C	20mm	item	2	$1.95	$3.90	
	Tees C x C	15mm	item	5	$0.81	$4.05	
	Stops C x C	15mm	item	2	$4.17	$8.34	
	Drop eared ell	15mm	item	1	$2.18	$2.18	
	Adapter, C x F	15mm	item	1	$1.17	$1.17	
	Adapter, C x M	15mm	item	2	$1.31	$2.62	
	Solder	100g	item	1	$0.69	$0.69	
	SUBTOTAL						$183.54
20.1	**PLUMBING FIXTURES - Basement Level**						
	Toilet Crane Radcliffe, white		item	1	$150.34	$150.34	
	Beneke 2000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiator specialty	G-230	item	1	$0.83	$0.83	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons, copper	15mm	item	1	$0.15	$0.15	
	R19 stops	15mm	item	1	$2.44	$2.44	

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	SUBTOTAL						$162.12
20.2	**ENAMELLED STEEL SINK - Basement Level**						
	Crane Coronette white, 1-306		item	1	$46.73	$46.73	
	Emco pop-up drain, 2123		item	1	$25.93	$25.93	
	Emco 4" centre set, 2-107		item	1	$14.60	$14.60	
	Flexible supplies	30cm	per pair	1	$1.96	$1.96	
	Chrome P traps	25mm	item	1	$12.31	$12.31	
	R19 stops	15mm	item	2	$2.44	$4.88	
	Shower Flat	810x810mm	item	1	$234.00	$234.00	
	Delta single lever faucet	622c	item	1	$64.86	$64.86	
	SUBTOTAL						$405.27
20.3	**BATHTUB - Basement Level**						
	Fibreglass tub/shower unit		item	1	$540.00	$540.00	
	Tub filler roughing-in, Emco 2271		item	1	$38.13	$38.13	
	Tub filler trim, Emco 2270		item	1	$34.54	$34.54	
	Bath drain Emco, 2800	40mm	item	1	$27.45	$27.45	
	SUBTOTAL						$640.12
20.4	**LAUNDRY AREA - Basement**						
	Dbl compartment vinyl laundry sink		item	1	$98.00	$98.00	
	Continuous wastes		item	1	$18.75	$18.75	
	Belanger endout contin. waste		item	1	$18.75	$18.75	
	Emco 2160 deck faucets		item	1	$38.63	$38.63	
	1-1/2 brass P traps		item	1	$14.49	$14.49	
	SUBTOTAL						$188.62
20.8	**ENSUITE BATH ROUGH-IN PLUMBING - Upper Floor**						
	Y's or TY's, ABS	75mm	item	2	$3.99	$7.98	
	Y's or TY's, ABS	50mm	item	2	$2.10	$4.20	

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	90's ABS	75mm	item	3	$3.32	$9.96	
	90's ABS	50mm	item	3	$1.41	$4.23	
	90's ABS	40mm	item	3	$0.88	$2.64	
	Line C.O,m ABS	50mm	item	1	$4.44	$4.44	
	Trap, ABS	40mm	item	1	$2.37	$2.37	
	Trap adapter	40mm	item	1	$1.14	$1.14	
	Floor Flange	75mm	item	1	$5.87	$5.87	
	Pipe ABS type one	75mm	m	3	$8.46	$25.38	
	Pipe ABS type one	50mm	m	2	$4.44	$8.88	
	Pipe ABS type one	40mm	m	5	$3.11	$15.55	
	Couplings, ABS	75mm	item	1	$1.43	$1.43	
	Couplings, ABS	50mm	item	1	$0.63	$0.63	
	Couplings, ABS	40mm	item	2	$0.41	$0.82	
	Suspension strap	20mm	m	1	$1.29	$1.29	
	Cement	1/4L	item	1	$1.05	$1.05	
	SUBTOTAL						**$97.86**
20.8	**WATER LINES - Ensuite Bath, Upper Level**						
	90 deg, Ell's, CxC	15mm	item	8	$0.44	$3.52	
	Tee's, C x C	20mm	item	2	$1.95	$3.90	
	Tee's, C x C	15mm	item	1	$0.81	$0.81	
	Couplings, C x C	15mm	item	4	$0.43	$1.72	
	Pipe copper, type M	15	m	9	$2.98	$26.82	
	SUBTOTAL						**$36.77**
	PLUMBING FIXTURES - Ensuite Bath, Upper Level						
20.1	Water Closets Crane Radcliffe white		item	1	$145.98	$145.98	
	Beneke 2,000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiator, specialty, G-230		item	1	$0.83	$0.83	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons copper	15mm	item	1	$0.15	$0.15	

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	R19 stops	15mm	item	1	$2.44	$2.44	
	SUBTOTAL						$157.76
	ENAMELLED STEEL LAVATORY - Ensuite Bath, Upper Level						
20.2	Crane Coronette, white, 1-306		item	1	$46.73	$46.73	
	Emco 4" center set, 2-107		item	1	$25.93	$25.93	
	Emco pop-up drain, 2123		item	1	$14.60	$14.60	
	Flexible supplies	30cm	item	1	$1.96	$1.96	
	Chrome P traps	25mm	item	1	$12.31	$12.31	
	R19 stops	15mm	item	2	$4.88	$9.76	
	SUBTOTAL						$111.29
	SUBTOTAL, plumbing per house						$3,970.19

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT #	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
21	**HVAC -House**					
21.1	**HEATING & VENTILATION**					
	Valve assembly	Item	1	$130.00	$130.00	$130.00
21.2	**FORCED AIR FURNACE**					
	Conventional Gas Fired Hot Air Furnace	Item	1	$767.00	$767.00	$767.00
21.3	**DUCTING**					
	Galvanized Sheet Metal Duct	m	1	$877.50	$877.50	$877.50
21.4	**THERMOSTAT**	Item	1	$19.50	$19.50	$19.50
21.5	**HUMIDIFIER**	Item	1	$113.75	$113.75	$113.75
21.9	**FLEXIBLE DUCTING**	Item	3	$11.38	$34.14	$34.14
21.10	**DUCT INSULATION**	m	9.5	$21.55	$204.73	$204.73
21.13	**FANS**					
	Bathroom Fan and Duct	Item	2	$78.00	$156.00	
	Range Hood Fan and Duct	Item	1	$162.50	$162.50	$318.50
21.15	**METAL CHIMNEY/VENT SYSTEM**	Item	1	$255.13	$255.13	$255.13
	SUBTOTAL, HVAC per house					$2,720.25

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
22	ELECTRICAL					
22.1	EXTERIOR service items					
	25.4mm Weatherhead	100	0.01	$495.80	$4.96	
	Cleves	100	0.01	$580.00	$5.80	
	Meter base	100	0.01	$43.00	$0.43	
	SUBTOTAL					$11.19
22.2	CONDUIT 1.25 Emt	100m	0.02	$80.20	$1.60	$1.60
22.3	MAIN SWITCH & Breaker Box					
	25.4mm Emt connectors	100	0.04	$85.28	$3.41	
	100 amp 32 circuit panel	item	1	$67.24	$67.24	
	#6 Bare copper wire	100m	0.06	$160.70	$9.64	
	Screws #8x25mm	100	0.4	$3.83	$1.53	
	SUBTOTAL					$81.83
22.4	ELEC. CIRCUIT BREAKERS					
	15 amp Single pole breakers	item	5	$4.88	$24.40	
	15 amp Double pole breakers	item	2	$10.77	$21.54	
	15 amp Ground fault breakers	item	2	$53.50	$107.00	
	40 amp Double pole breakers	item	1	$42.50	$42.50	
	30 amp Double pole breakers	item	1	$42.50	$42.50	
	SUBTOTAL					$237.94
22.5	INSULATED WIRE					
	#3x-Link, copper wire	m	17.4	$5.77	$100.40	
	9.5 flex	m	6	$12.00	$72.00	
	12.7mm cable straps	100	0.24	$22.05	$5.29	
	25.4 m Cable Straps	100	0.04	$45.15	$1.81	
	Cable Straps	100	1.4	$2.50	$3.50	
	20/20 Connectors	100	0.2	$16.00	$3.20	

Table 2.3 (Continued)
Building Material Costs For Single Attached House

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Range Cable Connector	100	0.04	$105.10	$4.20	
	Ground Clamp	100	0.01	$170.57	$1.71	
	9.5mm Flex Connectors	100	0.03	$37.95	$1.14	
	Marr Connectors	item	60	$0.25	$15.00	
	2-14 Insulated Copper Wire	m	336	$1.19	$399.84	
	3-14 Insulated Copper Wire	m	61	$1.99	$121.39	
	3-8 Insulated Copper Wire	m	76	$7.02	$533.52	
	3-10 Insulated Copper Wire	m	46	$4.11	$189.06	
	SUBTOTAL					$1,452.05
22.6	JUNCTION & OUTLET BOXES					
	1104 Switch Boxes	100	0.39	$161.80	$63.10	
	100mm Octogon Boxes	100	0.17	$205.85	$34.99	
	100mm Deep Square Boxes	100	0.03	$377.85	$11.34	
	Shallow Plaster Boxes	100	0.02	$204.60	$4.09	
	Duplex Plugs 110V	100	0.23	$92.75	$21.33	
	Duplex Plug Cover Plates	100	0.21	$29.75	$6.25	
	Water Proof Plug Covers	100	0.02	$201.25	$4.03	
	30A/220V Plug	100	0.01	$472.50	$4.73	
	40A/220V Plug	100	0.01	$472.50	$4.73	
	SUBTOTAL					$154.58
22.8	Light Fixtures					
	Bedroom	item	4	$15.00	$60.00	
	Kitchen	item	1	$100.00	$100.00	
	Bathroom	item	3	$50.00	$150.00	
	Exterior	item	2	$35.00	$70.00	
	Utility	item	2	$10.00	$20.00	
	Family room	item	2	$15.00	$30.00	
	SUBTOTAL					$430.00
	SUBTOTAL, Electrical					$2,369.19

Table 2.3 (Continued)
Building Material Costs For Single Attached House

SUMMARY - Single Attached House

Architectural	$32,720.39	
Mechanical - Plumbing	$3,970.19	
Mechanical - HVAC	$2,720.25	
Electrical	$2,369.19	
		$41,780.02

Table 2.4
Building Material Costs for Significant Alternative
Products Used in Single Attached House Construction

CAT#	ALTERNATIVES- Single Attached House	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	ALTERNATIVE ROOFING					
6.2	**CEDAR SHINGLES**					
	bundles for 180 m2 (1976.6 SF) @ 20SF	bundle	85	$21.00	$1,785	
	Black building paper #15	m2	156	$0.27	$42	
	Roofing nails	kg	17	$2.30	$39	
	SUBTOTAL					$1,866
	ALTERNATIVE EXTERIOR FINISHES					
9.1	**STUCCO**					
	Premixed stucco & scratchcoat	m3	1.98	$250.00	$495	
	Galvanized wire mesh 50x50	m2	118.8	$0.96	$114	
	Nails, 30mm galv roofing	kg	33	$1.73	$57	
	Black building paper #15	m2	118.8	$0.27	$32	
	SUBTOTAL					$698
9.2	**BEVELED CLEAR CEDAR SIDING**					
	190mm exposed face - in board feet	bf	1267.2	$1.71	$2,167	
	Cedar trim boards 19x89 - in board feet	bf	26.4	$0.60	$16	
	Nails 51 galvanized	kg	4.62	$2.21	$10	
	Black building paper #15	m2	118.8	$0.27	$32	
	SUBTOTAL					$2,225
9.3	**ALUMINUM SIDING**					
	Siding	m2	89.76	$38.35	$3,442	
	Alum starter strip	m	26.4	$0.74	$20	
	Alum outside corner post	m	5.94	$2.40	$14	
	Alum J mold	m	31.68	$0.74	$23	
	Alum prefinished fascia	m	47.52	$1.82	$86	
	Black building paper #15	m2	18.8	$0.27	$5	

Table 2.4 (Continued)
Building Material Costs for Significant Alternative
Products Used in Single Attached House Construction

CAT#	ALTERNATIVES- Single Attached House	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Nails	kg	1.98	$9.00	$17.82	
	SUBTOTAL					$3,635.91
9.5	BRICK					
	100mm Brick Veneer	m2	118.8	$43.50	$5,167.80	
	Mortar c/w colorant	m3	1.98	$128.00	$253.44	
	Galvanized ties	item	7674.48	$0.04	$306.98	
	Steel lintels	m	10.89	$9.00	$98.01	
	Weep vents	item	54.78	$0.32	$17.53	
	Black building paper #15	m2	118.8	$0.27	$32.08	
	SUBTOTAL					$5,875.83

Table 2.5

Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
1	**FOUNDATION**					
1.1	**CONCRETE FOUNDATION**					
	20 Mpa Concrete - footings & fdn walls	m3	19	$85.00	$1,615.00	
	150mm compacted sand	m3	25	$6.60	$165.00	
	6 mil vapour barrier	m2	164	$0.32	$52.48	
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	$573.30	
	100mm conc, sidewalk & driveway	m2	10	$9.25	$92.50	
	Form plywood 19mm spruce	m2	14	$20.00	$280.00	
	38x89 spruce whalers etc.	item	225	$0.29	$65.25	
	Form ties	item	750	$0.15	$112.50	
	Nails .89 coated	kg	2.5	$1.34	$3.35	
	Reinforcing steel bars 15mm	m	175	$0.98	$171.50	
	Welded mesh reinforcing	m2	90	$0.96	$86.40	
	Anchor bolts	item	50	$0.38	$19.00	
	4 mil Polyethylene protective sheet	m2	120	$0.23	$27.60	
	SUBTOTAL					$3,263.88
	FIREPLACE					
	c/w dual metal const extensions & elbows, cap, hearth, & lam. cedar mantel	item	1	$1,148.50	$1,148.50	
	100mm clay brick veneer	m2	9	$43.50	$391.50	
	SUBTOTAL					$1,540.00
2	**DAMPPROOFING**					
2.1	Asphalt emulsion	litre	18	$1.35	$24.30	
2.2	100mm Weeping tile	m	25	$3.86	$96.50	
	150mm crushed gravel	m3	14	$7.13	$99.82	
	SUBTOTAL					$220.62
4	**ENTRY STEPS**					
	Precast conc steps 2 risers	item	1	$217.00	$217.00	

Table 2.5 (Continued)
Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Precast concrete brackets	item	1	$87.00	$87.00	
	SUBTOTAL					$304.00
5	ROUGH CARPENTRY					
5.1	DIMENSION LUMBER					
	38X89 spruce	1000 bf	2.561	$294.00	$752.93	
	38X140 spruce	1000 bf	2.555	$309.00	$789.50	
	38X235 spruce	1000 bf	2.105	$549.00	$1,155.65	
	38X38 spruce	1000 bf	0.12	$369.00	$44.28	
	19X140 spruce	1000 bf	0.036	$650.00	$23.40	
	SUBTOTAL					$2,765.76
5.2	SHEATHING MATERIAL					
	15.9mm T&G fir (floor)	m2	110	$6.45	$709.50	
	12.7mm spruce plywood (roof)	m2	90	$4.36	$392.40	
	8mm wafer board (walls)	m2	150	$2.68	$402.00	
	SUBTOTAL					$1,503.90
5.3	ADJ. STEEL POSTS	item	2	$32.99	$65.98	$65.98
5.5	PREMFD WOOD TRUSSES	item	30	$45.00	$1,350.00	$1,350.00
5.2.7	NAILS					
	51mm phosphate coated	kg	20	$2.21	$44.20	
	63.5mm phosphate coated	kg	10	$1.41	$14.10	
	89mm phosphate coated	kg	51	$1.34	$68.34	
	51mm hot dipped galv	kg	1	$2.05	$2.05	
	25mm annular	kg	1	$1.73	$1.73	
	SUBTOTAL					$130.42
5.7	CEDAR DECK					
	89x89 presure treated posts	m	1.2	$1.93	$2.32	
	38x184 presure treated joists	m	31.1	$2.36	$73.40	

Table 2.5 (Continued)

Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	38x89 cedar decking	m	91	$1.37	$124.67	
	Cedar guard & handrail					
	-38x140 top rail	m	14.4	$2.65	$38.16	
	-38x 89 bottom rail	m	14.4	$1.37	$19.73	
	-38x38 vertical rails	m	140	$1.05	$147.00	
	SUBTOTAL					$405.28
5.8	CONSTRUCTION ADHESIVE	litre	20	$7.25	$145.00	$145.00
5.9	SHEATHING SCREWS	item	2600	$0.03	$78.00	$78.00
5.11	WOOD STAIR	risers	23	$17.30	$397.90	$397.90
6	ROOFING					
	Asphalt shingles @ 32SF/bundle	bundles	52	$9.79	$509.08	
	Black bldg felt #15	m2	156	$0.27	$42.12	
	Roofing nails	kg	16	$2.30	$36.80	
	Tab down cement	litre	10	$1.35	$13.50	
	SUBTOTAL					$601.50
6.4	FLASHING					
	Alum prefin flashing	m	60	$2.27	$136.20	$136.20
6.5	EAVESTROUGHS & DOWNSPOUTS					
	Alum eavestroughs	m	36	$2.42	$87.12	
	Alum prefin end caps	units	2	$0.35	$0.70	
	Alum prefin out drops	units	7	$0.70	$4.90	
	Alum prefin elbows	units	7	$1.25	$8.75	
	Alum prefin downspouts	m	25	$2.42	$60.50	
	Alum ferrules	units	36	$0.20	$7.20	
	SUBTOTAL					$169.17
7	WINDOWS					
	Window - wood frame, alum	unit	1	$245.00	$245.00	

Table 2.5
Building Material Costs For Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	sash, D/G horiz slider 1500x900mm					
	Window - wood frame, alum	unit	4	$235.00	$940.00	
	sash, D/G slider 1200x900mm					
	Window - wood frame, alum	unit	1	$580.00	$580.00	
	clad, 2400x1700mm,fixed					
	SUBTOTAL					$2,301.00
8	INSULATION & VAPOUR BARRIER					
8.1	6 mil Polyethylene sheeting	m2	325	$0.23	$74.75	
	Fibrous batt insulation:					
	RSI-2.1	batts	300	$1.91	$573.00	
	RSI-3.5	batts	300	$1.98	$594.00	
8.6	Treated cellulose RSI-6 (attic)	m3	30	$17.63	$528.90	
	SUBTOTAL					$1,770.65
9	EXTERIOR FINISHES					
9.1	PARGING - Exterior Basement					
	Parging wall above grade	m3	0.5	$80.00	$40.00	
	Galvanized wire mesh 50x50	m2	10	$0.96	$9.60	
	Nails 30mm galv roofing	kg	2.5	$1.73	$4.33	
	SUBTOTAL					$53.93
9.5	BRICKWORK - Front facade only					
	100 Brick veneer facing	m2	44	$43.50	$1,914.00	
	Mortar	m3	1	$128.00	$128.00	
	Galvanized ties	item	2842	$0.04	$99.47	
	Steel Lintels	m	15	$9.00	$135.00	
	Weep Vents	item	21	$0.32	$6.72	
	Black building paper #15	m2	44	$0.27	$11.88	
	SUBTOTAL					$2,295.07

Table 2.5 (Continued)
Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	VINYL SIDING					
	Alum prefinished fascia	m	29.52	$1.82	$53.73	
	Nails	kg	1.23	$9.00	$11.07	
	Vented alum panels 406mm exposed face	m	17.68	$3.35	$59.23	
	100mm vinyl siding	m2	55.76	$9.42	$525.26	
	Black building paper #15	m2	55.76	$0.27	$15.06	
	SUBTOTAL					$664.34
9.9	Acrylic sealant caulking (300ml)	tubes	30	$3.90	$117.00	$117.00
10	**EXTERIOR DOORS & FRAMES**					
10.10	Insulated metal door & wood frame	item	1	$295.00	$295.00	
10.1	Aluminum storm door	item	1	$250.00	$250.00	
10.11	Patio door 1800x2100	item	1	$685.00	$685.00	
10.6	Weatherstripping Threshold	m	1	$5.20	$5.20	
10.6	Weatherstrip door perimeter	m	6	$5.40	$32.40	
	SUBTOTAL					$1,267.60
11	**INTERIOR WALL/CEILING FINISHES**					
11.1	Drywall					
	Gypsum board 12.7mm	m2	580	$1.95	$1,131.00	
	Drywall tape	m	1400	$0.03	$35.00	
	Corner bead	m	60	$0.40	$24.00	
	Joint filler	kg	150	$0.60	$90.00	
	Ceiling texture spray	kg	50	$0.70	$35.00	
	Drywall screws	items	4680	$0.03	$140.40	
	SUBTOTAL					$1,455.40
11.6	**TILE**					
	Ceramic tile	m2	9	$22.60	$203.40	
	Tile adhesive	litre	8	$5.20	$41.60	
	Grout	kg	3	$3.08	$9.24	
	Silicone sealant	tube	1	$5.00	$5.00	
	6.3mm particle board for ceramic tile fir	m2	22	$5.27	$115.94	

Table 2.5 (Continued)
Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	SUBTOTAL					$375.18
12	**FLOORING**					
12.1	**CARPET**					
	Carpet, 32 oz. 100% nylon	m2	112	$17.93	$2,008.16	
	Foam underpad 6mm	m2	112	$3.58	$400.96	
	Carpet grippers	m	160	$0.33	$52.80	
	SUBTOTAL					$2,461.92
12.3	**RESILIENT FLOORING**					
	Sheet vinyl flooring - Kit/Bath/Din Rm	m2	47	$11.95	$561.65	
	Flooring adhesive	litre	5	$4.17	$20.85	
	SUBTOTAL					$582.50
13	**PAINTING - Exterior 2 coats**					
	Enamel windows, doors, trim	litre	2	$10.00	$20.00	
	Stain finish cedar decking	litre	2	$7.00	$14.00	
	Stain finish rail	litre	5	$7.00	$35.00	
	PAINTING - Interior 2 coats					
	Enamel windows, doors, trim	litre	8	$10.00	$80.00	
	Semigloss or flat latex to drywall	litre	64	$9.00	$576.00	
	Stain finish doors & frames	litre	10	$9.00	$90.00	
	Stain finish bifold doors & frames	litre	2	$7.00	$14.00	
	Semigloss baseboards & shelves	litre	10	$10.00	$100.00	
	Stain finish handrails	litre	1	$7.00	$7.00	
	Stain finish balustrade	litre	1	$7.00	$7.00	
	SUBTOTAL					$950.00
14	**MILLWORK**					
14.1	Int hollow core wood doors, wood frames					
	2032x711mm	item	3	$68.00	$204.00	
	2032x762mm	item	6	$68.00	$408.00	
	SUBTOTAL					$612.00

Table 2.5 (Continued)
Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
14.3	**CLOSET DOORS - wood bifolds c/w hardware**					
	2032x610mm	item	8	$36.00	$288.00	
	2032x750mm	item	2	$38.40	$76.80	
	2032x914mm	item	2	$40.50	$81.00	
	SUBTOTAL					$445.80
14.6	**WINDOW/DOOR TRIM**					
	Unfin wood casing 12.7x50mm	m	126	$0.74	$93.24	$93.24
14.7	**BASEBOARD**					
	Unfin wood baseboard 12.7x70mm	m	227	$0.82	$186.14	$186.14
14.8	**BATHROOM VANITIES**					
	Wood cabinet & countertop	m	2.7	$278.85	$752.90	$752.90
14.9	**KITCHEN CUPBOARDS**					
	Lower cupboards	m	4	$297.00	$1,188.00	
	Upper cupboards	m	4	$150.00	$600.00	
	Range hood	item	1	$84.00	$84.00	
	SUBTOTAL					$1,872.00
14.10	**CUPBOARD & CLOSET SHELVES**					
	Plywood c/w hardwood nosing	m	13.9	$11.20	$155.68	$155.68
14.11	**CLOTHES ROD - Closets**					
	Chrome plated rod 25mm diam	m	21	$5.10	$107.10	$107.10
15	**HARDWARE**					
15.1	Entry lockset, house	item	2	$29.99	$59.98	
15.3	Privacy lockset, house	item	7	$23.29	$163.03	
15.4	Passage latchset, house	item	3	$15.56	$46.68	
15.7	Door stop	item	8	$1.09	$8.72	
	Security deadbolt	item	1	$16.50	$16.50	
	Mailbox	item	1	$14.00	$14.00	

Table 2.5 (Continued)
Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	House numbers	item	5	$7.00	$35.00	
	SUBTOTAL					$343.91
16	BATHROOM ACCESSORIES					
16.1	Toilet paper holder, chrome	item	3	$6.80	$20.40	
16.2	Towel bar chrome 610mm	item	3	$8.80	$26.40	
16.3	Mirror c/w clips 6x12x900mm	item	3	$20.00	$60.00	
16.7	Soap dish & grab, metal	item	2	$9.60	$19.20	
16.8	Medicine cabinet	item	3	$65.00	$195.00	
16.9	Robe hook, chrome	item	3	$2.60	$7.80	
	25mm diam. metal shower curtain rod	item	2	$12.80	$25.60	
	SUBTOTAL					$354.40
	SUBTOTAL, Architectural					$32,295.36

Table 2.5 (Continued)
Building Material Costs For Row House

CAT#	ROW HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
20	**PLUMBING -House**						
20.8	**DRAINS, WASTES, VENTS - Upper/Main Floor**						
	ABS PLASTIC PIPE TYPE ONE						
	Y's or Ty's ABS	100mm	item	4	$9.48	$37.92	
	Y's or Ty's ABS	75mm	item	5	$3.99	$19.95	
	Y's or Ty's ABS	50mm	item	1	$2.10	$2.10	
	Y's or Ty's ABS	40mm	item	3	$1.13	$3.39	
	Ells, 90 or 45 deg	100mm	item	6	$6.66	$39.96	
	Ells, 90 or 45 deg	75mm	item	4	$3.32	$13.28	
	Ells, 90 or 45 deg	50mm	item	6	$1.41	$8.46	
	Ells, 90 or 45 deg	40mm	item	11	$0.88	$9.68	
	Couplings - ABS	100mm	item	3	$2.66	$7.98	
	Couplings - ABS	75mm	item	3	$1.43	$4.29	
	Couplings - ABS	50mm	item	1	$0.63	$0.63	
	Couplings - ABS	40mm	item	6	$0.41	$2.46	
	Pipe ABS	100mm	metre	7.6	$3.97	$30.17	
	Pipe ABS	75mm	metre	12.6	$2.58	$32.51	
	Pipe ABS	50mm	metre	6	$1.36	$8.16	
	Pipe ABS	40mm	metre	21	$0.95	$19.95	
	Clean Outs ABS Line	100mm	item	2	$13.59	$27.18	
	Clean Outs ABS Line	50mm	item	2	$4.44	$8.88	
	Clean Outs ABS Line	40mm	item	1	$2.70	$2.70	
	Traps, ABS	100x75mm	item	1	$25.04	$25.04	
	Weeping tile c/w back water valve and c.o.	75mm	item	1	$67.91	$67.91	
	Traps, ABS	40mm	item	3	$2.37	$7.11	
	Increaser, ABS	100x75mm	item	2	$3.59	$7.18	
	Bushings, ABS	75mm	item	2	$2.20	$4.40	

Table 2.5 (Continued)
Building Material Costs For Row House

CAT#	ROW HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Expansion Joint ABS	75mm	item	1	$16.90	$16.90	
	Floor Flange	100x75mm	item	2	$5.87	$11.74	
	Flashing aluminum high cone	100mm	item	1	$12.73	$12.73	
	Test caps PVC	50mm	item	1	$0.76	$0.76	
	Floor drain grate, ABS	100mm	item	1	$6.28	$6.28	
	ABS cement		litre	1	$7.73	$7.73	
	ABS cleaner		litre	1	$5.74	$5.74	
	Suspension strap	20mm	metre	3	$3.29	$9.87	
	Stenco access cover	150x150mm	item	2	$9.62	$19.24	
	SUBTOTAL						$482.28
20.1	**WATER CLOSETS - Main Bath, Upper Floor**						
	Water closet, Crane Radcliffe		item	1	$145.98	$145.98	
	Beneke 2000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiateor G-230		item	1	$0.93	$0.93	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons copper	15mm	item	1	$0.15	$0.15	
	R19 stops	15mm	item	1	$2.44	$2.44	
	SUBTOTAL						$157.86
20.2	**ENAMELLED STEEL BATHROOM SINKS - Main Bath, Upper Floor**						
	Crane Coronette, white 1.306		item	1	$57.01	$57.01	
	Emco 4" centre set, 2-107		item	1	$31.64	$31.64	
	Emco pop-up drain, 2123		item	1	$17.81	$17.81	
	Flexible supplies c/w stops	30cm	set	1	$8.35	$8.35	
	Chrome P traps	25mm	item	1	$15.02	$15.02	
	SUBTOTAL						$129.83
20.3	**BATHTUB - Upper Floor**						
	Fibreglass tub/shower unit		Item	1	$540.00	$540.00	
	Tub filler roughing-in, Emco 2271		item	1	$38.13	$38.13	

Table 2.5 (Continued)
Building Material Costs For Row House

CAT#	ROW HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Tub filler trim, Emco 2270		item	1	$34.54	$34.54	
	Bath drain Emco, 2800	40mm	item	1	$27.45	$27.45	
	SUBTOTAL						$640.12
20.4	**KITCHEN - Main Floor**						
	Dbl compartment stainless steel sinks, Steel Queen QDL 203		item	1	$167.23	$167.23	
	Continuous wastes		item	1	$18.75	$18.75	
	Belanger endout contin. waste		item	1	$18.75	$18.75	
	Emco 2160 deck faucets		item	1	$38.63	$38.63	
	1-1/2 brass P traps		item	1	$14.49	$14.49	
	SUBTOTAL						$257.85
20.10	**H/W HEATER, John Wood JW402**		item	1	$307.26		$307.26
	SUBTOTAL						
20.7	**VENT PIPE**						
	Galv. Ells	75mm	item	3	$1.56	$4.68	
	Galv. pipe, 20 ga.	75mm	m	2	$3.48	$6.96	
	SUBTOTAL				$0.00		$11.64
20.8	**PIPES, FITTINGS & ACCESSORIES - Basement Level**						
	Ells, ABS	75mm	item	4	$3.32	$13.28	
	Ells, ABS	50mm	item	3	$1.41	$4.23	
	Ells, ABS	100x75mm	item	1	$8.62	$8.62	
	Ells, ABS	40mm	item	3	$0.88	$2.64	
	Y's and Ty's	100mm	item	1	$9.48	$9.48	
	Y's and Ty's	75mm	item	1	$3.99	$3.99	
	Y's and Ty's	50mm	item	1	$2.10	$2.10	
	Clean out line	50mm	item	1	$4.44	$4.44	
	Trap	40mm	item	1	$2.37	$2.37	

Table 2.5 (Continued)
Building Material Costs For Row House

CAT#	ROW HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Trap Adapter	40mm	item	1	$1.14	$1.14	
	Trap deep seal	75mm	item	1	$12.28	$12.28	
	Floor flange	100x75mm	item	1	$5.87	$5.87	
	Test cap	100mm	item	1	$1.40	$1.40	
	Test cap	75mm	item	1	$1.03	$1.03	
	Test cap	50mm	item	1	$0.76	$0.76	
	Pipe ABS type one	75mm	m	3	$8.46	$25.38	
	Pipe ABS type one	50mm	m	2	$4.44	$8.88	
	Pipe ABS type one	40mm	m	5	$3.11	$15.55	
	Couplings, ABS	50mm	item	1	$0.63	$0.63	
	Couplings, ABS	40mm	item	2	$0.41	$0.82	
	Cement, ABS		.5litre	1	$2.10	$2.10	
	Copper pipe type M	15mm	m	12	$2.29	$27.48	
	Couplings C x C	15mm	item	4	$0.43	$1.72	
	90 deg Ells, C x C	15mm	item	10	$0.44	$4.40	
	Tees C x C	20mm	item	2	$1.95	$3.90	
	Tees C x C	15mm	item	5	$0.81	$4.05	
	Stops C x C	15mm	item	2	$4.17	$8.34	
	Drop eared ell	15mm	item	1	$2.18	$2.18	
	Adapter, C x F	15mm	item	1	$1.17	$1.17	
	Adapter, C x M	15mm	item	2	$1.31	$2.62	
	Solder	100g	item	1	$0.69	$0.69	
	SUBTOTAL						$183.54
20.1	**PLUMBING FIXTURES - Basement Level**						
	Toilet Crane Radcliffe, white		item	1	$150.34	$150.34	
	Beneke 2000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiator specialty	G-230	item	1	$0.83	$0.83	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons, copper	15mm	item	1	$0.15	$0.15	
	R19 stops	15mm	item	1	$2.44	$2.44	

Table 2.5 (Continued)
Building Material Costs For Row House

CAT#	ROW HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	SUBTOTAL						$162.12
20.2	**ENAMELLED STEEL SINK - Basement Level**						
	Crane Coronette white, 1-306		item	1	$46.73	$46.73	
	Emco pop-up drain, 2123		item	1	$25.93	$25.93	
	Emco 4" centre set, 2-107		item	1	$14.60	$14.60	
	Flexible supplies	30cm	per pair	1	$1.96	$1.96	
	Chrome P traps	25mm	item	1	$12.31	$12.31	
	R19 stops	15mm	item	2	$2.44	$4.88	
	Shower Flat	810x810mm	item	1	$234.00	$234.00	
	Delta single lever faucet	622c	item	1	$64.86	$64.86	
	SUBTOTAL						$405.27
20.3	**BATHTUB - Basement Level**						
	Fibreglass tub/shower unit		item	1	$540.00	$540.00	
	Tub filler roughing-in, Emco 2271		item	1	$38.13	$38.13	
	Tub filler trim, Emco 2270		item	1	$34.54	$34.54	
	Bath drain Emco, 2800	40mm	item	1	$27.45	$27.45	
	SUBTOTAL						$640.12
20.4	**LAUNDRY AREA - Basement**						
	Dbl compartment vinyl laundry sink		item	1	$98.00	$98.00	
	Continuous wastes		item	1	$18.75	$18.75	
	Belanger endout contin. waste		item	1	$18.75	$18 75	
	Emco 2160 deck faucets		item	1	$38.63	$38.63	
	1-1/2 brass P traps		item	1	$14.49	$14.49	
	SUBTOTAL						$188.62
20.8	**ENSUITE BATH ROUGH-IN PLUMBING - Upper Floor**						
	Y's or TY's, ABS	75mm	item	2	$3.99	$7.98	
	Y's or TY's, ABS	50mm	item	2	$2.10	$4.20	

Table 2.5 (Continued)
Building Material Costs For Row House

CAT#	ROW HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	90's ABS	75mm	item	3	$3.32	$9.96	
	90's ABS	50mm	item	3	$1.41	$4.23	
	90's ABS	40mm	item	3	$0.88	$2.64	
	Line C.O,m ABS	50mm	item	1	$4.44	$4.44	
	Trap, ABS	40mm	item	1	$2.37	$2.37	
	Trap adapter	40mm	item	1	$1.14	$1.14	
	Floor Flange	75mm	item	1	$5.87	$5.87	
	Pipe ABS type one	75mm	m	3	$8.46	$25.38	
	Pipe ABS type one	50mm	m	2	$4.44	$8.88	
	Pipe ABS type one	40mm	m	5	$3.11	$15.55	
	Couplings, ABS	75mm	item	1	$1.43	$1.43	
	Couplings, ABS	50mm	item	1	$0.63	$0.63	
	Couplings, ABS	40mm	item	2	$0.41	$0.82	
	Suspension strap	20mm	m	1	$1.29	$1.29	
	Cement	1/4L	item	1	$1.05	$1.05	
	SUBTOTAL						**$97.86**
20.8	**WATER LINES - Ensuite Bath, Upper Level**						
	90 deg, Ell's, CxC	15mm	item	8	$0.44	$3.52	
	Tee's, C x C	20mm	item	2	$1.95	$3.90	
	Tee's, C x C	15mm	item	1	$0.81	$0.81	
	Couplings, C x C	15mm	item	4	$0.43	$1.72	
	Pipe copper, type M	15	m	9	$2.98	$26.82	
	SUBTOTAL						**$36.77**
	PLUMBING FIXTURES - Ensuite Bath, Upper Level						
20.1	Water Closets Crane Radcliffe white		item	1	$145.98	$145.98	
	Beneke 2,000 closet seat, white		item	1	$7.27	$7.27	
	Setting seal radiator, specialty, G-230		item	1	$0.83	$0.83	
	Flexible supplies	30cm	item	1	$1.09	$1.09	
	Escutcheons copper	15mm	item	1	$0.15	$0.15	

Table 2.5 (Continued)
Building Material Costs For Row House

CAT#	ROW HOUSE		UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	R19 stops	15mm	item	1	$2.44	$2.44	
	SUBTOTAL						$157.76
	ENAMELLED STEEL LAVATORY - Ensuite Bath, Upper Level						
20.2	Crane Coronette, white, 1-306		item	1	$46.73	$46.73	
	Emco 4" center set, 2-107		item	1	$25.93	$25.93	
	Emco pop-up drain, 2123		item	1	$14.60	$14.60	
	Flexible supplies	30cm	item	1	$1.96	$1.96	
	Chrome P traps	25mm	item	1	$12.31	$12.31	
	R19 stops	15mm	item	2	$4.88	$9.76	
	SUBTOTAL						$111.29
	SUBTOTAL, plumbing per house						$3,970.19

Table 2.5 (Continued)
Building Material Costs For Row House

CAT #	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
21	HVAC -House					
21.1	HEATING & VENTILATION					
	Valve assembly	Item	1	$130.00	$130.00	$130.00
21.2	FORCED AIR FURNACE					
	Conventional Gas Fired Hot Air Furnace	Item	1	$767.00	$767.00	$767.00
21.3	DUCTING					
	Galvanized Sheet Metal Duct	m	1	$877.50	$877.50	$877.50
21.4	THERMOSTAT	Item	1	$19.50	$19.50	$19.50
21.5	HUMIDIFIER	Item	1	$113.75	$113.75	$113.75
21.9	FLEXIBLE DUCTING	Item	3	$11.38	$34.14	$34.14
21.10	DUCT INSULATION	m	9.5	$21.55	$204.73	$204.73
21.13	FANS					
	Bathroom Fan and Duct	Item	2	$78.00	$156.00	
	Range Hood Fan and Duct	Item	1	$162.50	$162.50	$318.50
21.15	METAL CHIMNEY/VENT SYSTEM	Item	1	$255.13	$255.13	$255.13
	SUBTOTAL, HVAC per house					$2,720.25

Table 2.5 (Continued)
Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
22	ELECTRICAL					
22.1	EXTERIOR service items					
	25.4mm Weatherhead	100	0.01	$495.80	$4.96	
	Cleves	100	0.01	$580.00	$5.80	
	Meter base	100	0.01	$43.00	$0.43	
	SUBTOTAL					$11.19
22.2	CONDUIT 1.25 Emt	100m	0.02	$80.20	$1.60	$1.60
22.3	MAIN SWITCH & Breaker Box					
	25.4mm Emt connectors	100	0.04	$85.28	$3.41	
	100 amp 32 circuit panel	item	1	$67.24	$67.24	
	#6 Bare copper wire	100m	0.06	$160.70	$9.64	
	Screws #8x25mm	100	0.4	$3.83	$1.53	
	SUBTOTAL					$81.83
22.4	ELEC. CIRCUIT BREAKERS					
	15 amp Single pole breakers	item	5	$4.88	$24.40	
	15 amp Double pole breakers	item	2	$10.77	$21.54	
	15 amp Ground fault breakers	item	2	$53.50	$107.00	
	40 amp Double pole breakers	item	1	$42.50	$42.50	
	30 amp Double pole breakers	item	1	$42.50	$42.50	
	SUBTOTAL					$237.94
22.5	INSULATED WIRE					
	#3x-Link, copper wire	m	17.4	$5.77	$100.40	
	9.5 flex	km	6	$12.00	$72.00	
	12.7mm cable straps	100	0.24	$22.05	$5.29	
	25.4 m Cable Straps	100	0.04	$45.15	$1.81	
	Cable Straps	100	1.4	$2.50	$3.50	
	20/20 Connectors	100	0.2	$16.00	$3.20	

Table 2.5 (Continued)
Building Material Costs for Row House

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Range Cable Connector	100	0.04	$105.10	$4.20	
	Ground Clamp	100	0.01	$170.57	$1.71	
	9.5mm Flex Connectors	100	0.03	$37.95	$1.14	
	Marr Connectors	item	60	$0.25	$15.00	
	2-14 Insulated Copper Wire	m	336	$1.19	$399.84	
	3-14 Insulated Copper Wire	m	61	$1.99	$121.39	
	3-8 Insulated Copper Wire	m	76	$7.02	$533.52	
	3-10 Insulated Copper Wire	m	46	$4.11	$189.06	
	SUBTOTAL					$1,453.85
22.6	JUNCTION & OUTLET BOXES					
	1104 Switch Boxes	100	0.39	$161.80	$63.10	
	100mm Octagon Boxes	100	0.17	$205.85	$34.99	
	100mm Deep Square Boxes	100	0.03	$377.85	$11.34	
	Shallow Plaster Boxes	100	0.02	$204.60	$4.09	
	Duplex Plugs 110V	100	0.23	$92.75	$21.33	
	Duplex Plug Cover Plates	100	0.21	$29.75	$6.25	
	Water Proof Plug Covers	100	0.02	$201.25	$4.03	
	30A/220V Plug	100	0.01	$472.50	$4.73	
	40A/220V Plug	100	0.01	$472.50	$4.73	
	SUBTOTAL					$154.58
22.8	Light Fixtures					
	Bedroom	item	4	$15.00	$60.00	
	Kitchen	item	1	$100.00	$100.00	
	Bathroom	item	3	$50.00	$150.00	
	Exterior	item	2	$35.00	$70.00	
	Utility	item	2	$10.00	$20.00	
	Family room	item	2	$15.00	$30.00	
	SUBTOTAL					$430.00
	SUBTOTAL, Electrical					$2,360.19

Table 2.5 (Continued)
Building Material Costs For Row House

SUMMARY - Row House		
Architectural	$32,295.36	
Mechanical - Plumbing	$3,970.19	
Mechanical - HVAC	$2,720.25	
Electrical	$2,575.26	
GRAND TOTAL		$41,561.06

Table 2.6
Building Material Costs for Significant Alternative
Products Used in Row House Construction

CAT#	ALTERNATIVES- Row House	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	ALTERNATIVE ROOFING					
6.2	**CEDAR SHINGLES**					
	bundles for 180 m2 (1976.6 SF) @ 20SF	bundle	85	$21.00	$1,785	
	Black building paper #15	m2	156	$0.27	$42	
	Roofing nails	kg	17	$2.30	$39	
	SUBTOTAL					$1,866
	ALTERNATIVE EXTERIOR FINISHES					
9.1	**STUCCO**					
	Premixed stucco & scratchcoat	m3	1.23	$250.00	$308	
	Galvanized wire mesh 50x50	m2	73.8	$0.96	$71	
	Nails, 30mm galv roofing	kg	20.5	$1.73	$35	
	Black building paper #15	m2	73.8	$0.27	$20	
	SUBTOTAL					$434
9.2	**BEVELED CLEAR CEDAR SIDING**					
	190mm exposed face - in board feet	bf	787.2	$1.71	$1,346	
	Cedar trim boards 19x89 - in board feet	bf	16.4	$0.60	$10	
	Nails 51 galvanized	kg	2.87	$2.21	$6	
	Black building paper #15	m2	73.8	$0.27	$20	
	SUBTOTAL					$1,382
9.3	**ALUMINUM SIDING**					
	Siding	m2	55.76	$38.35	$2,138	
	Alum starter strip	m	16.4	$0.74	$12	
	Alum outside corner post	m	3.69	$2.40	$9	
	Alum J mold	m	19.68	$0.74	$15	

Table 2.6 (Continued)
Building Material Costs for Significant Alternative
Products Used in Row House Construction

CAT#	ALTERNATIVES- Row House	UNITS	QTY	$/UNIT	$ VALUE	SUBTOTALS
	Alum prefinished fascia	m	29.52	$1.82	$53.73	
	Black building paper #15	m2	73.8	$0.27	$19.93	
	Nails	kg	1.23	$9.00	$11.07	
	SUBTOTAL					$2,729.78
9.5	BRICK					
	100mm Brick Veneer	m2	55.76	$43.50	$2,425.56	
	Mortar c/w colorant	m3	1.23	$128.00	$157.44	
	Galvanized ties	item	4768	$0.04	$190.72	
	Steel lintels	m	6.76	$9.00	$60.84	
	Weep vents	item	34	$0.32	$10.88	
	Black building paper #15	m2	73.8	$0.27	$19.93	
	SUBTOTAL					$2,865.36

Table 2.7

Building Material Costs for Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
1	**FOUNDATIONS**						
1.1	**CONCRETE FOUNDATION**						
	Concrete 25mPa	m3	65	2.71	$92.54	$250.78	
	Concrete 20mPa	m3	46	1.92	$85.00	$163.20	
	Form plywood 19mm spruce	m2	115	4.80	$20.00	$96.00	
	38x89 spruce	1000bf	0.432	0.02	$294.00	$5.29	
	38x38 spruce	1000bf	0.288	0.01	$369.00	$4.43	
	38x191 spruce	1000bf	2.16	0.09	$324.00	$29.16	
	Form ties	1000	0.96	0.04	$420.00	$16.80	
	Nails .89 coated	kg	161	6.71	$1.34	$8.99	
	Reinforcing steel bars 15mm	kg	1850	77.10	$0.69	$53.20	
	Welded mesh reinforcing	m2	511	21.28	$0.96	$20.43	
	Anchor bolts	unit	110	4.60	$0.38	$1.75	
	Polyethylene sheet	m2	562	23.40	$0.23	$5.38	
	SUBTOTAL						$655.41
2	**WEEPING TILE/DAMP-PROOFING**						
	Plastic perforated pipe	m	108	4.50	$1.93	$8.69	
	Asphalt emulsion	litre	89	3.70	$1.35	$5.00	
	Weeping tile rock	m3	12	0.49	$3.86	$1.89	
	Fibreglas batt insulation R12	batt	43	1.80	$1.19	$2.14	
	SUBTOTAL						$17.71
4	**ENTRY STEPS**						
4.3	Wrt iron rail-balcony & stair	m	184	7.65	$104.00	$795.60	
	Stair hand rail on wall	m	60.5	2.52	$53.00	$133.56	
	SUBTOTAL						$929.16

Table 2.7 (Continued)
Building Material Costs for Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
5	ROUGH FRAMING						
5.1	DIMENSION LUMBER						
	38x89 spruce	1000bf	31.1	1.30	$294.00	$380.98	
	38X140 spruce	1000bf	28.2	1.18	$309.00	$363.08	
	38X235 spruce - 2x10 joists	1000bf	42.6	1.77	$549.00	$973.38	
	SUBTOTAL						$1,336.45
5.2	SHEATHING MATERIAL						
	19mm spruce plywood	m2	1603	66.80	$20.00	$1,336.00	
	12.7mm spruce ply - roof	m2	588	24.50	$3.09	$75.71	
	8mm wafer board - wall	m2	814	33.90	$2.68	$90.85	
	6.3mm particle board	m2	408	17.00	$5.27	$89.59	
	Fibre board	m2	1531	63.80	$3.09	$197.14	
	SUBTOTAL						$1,789.29
5.2.7	NAILS						
	89mm phosphate coated	kg	359	14.96	$1.34	$20.05	
	63.5mm phosphate coated	kg	77	3.20	$1.41	$4.51	
	51mm phosphate coated	kg	108	4.51	$1.44	$6.49	
	25mm coated	kg	9	0.39	$1.30	$0.51	
	25mm annular	kg	14.5	0.60	$1.73	$1.04	
	SUBTOTAL						$32.60
5.11	STAIRS Premfd wood						
	7 risers 6 treads 1250 wide	item	12	0.50	$121.31	$60.66	$60.66
6	ROOFING						
6.4	Galv iron flashing	m	100	4.20	$2.23	$9.37	$9.37
6.6	BUILT-UP ROOFING						
	Black building felt #15	m2	3552	148.00	$0.27	$39.96	
	Roof underlay sheet-vented	m2	600	25.00	$2.75	$68.75	
	Pea gravel	kg	11808	492.00	$0.04	$19.68	
	Rigid styrene insul RSI-6	m2	590	24.59	$27.54	$677.21	

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
	Nails 30mm	kg	50.5	2.10	$37.56	$78.88	
	Rubberized membrane	m3	75	3.13	$39.00	$122.07	
	SUBTOTAL						$1,006.54
7	**WINDOWS**						
	Window - alum frame, alum sash, sealed D/G 2.4 x 2.55	item	4	0.17	$967.00	$161.49	
	Window - wood frame, alum sash, D/G slider 2.4 x 0.9	item	6	0.25	$390.00	$97.50	
	ditto - 1.5 x 0.9	item	28	1.17	$268.00	$312.76	
	ditto - 0.9 x 0.9	item	3	0.12	$201.00	$24.12	
	SUBTOTAL						$595.87
8	**INSULATION & VAP BARRIER**						
	Polyethylene sheeting .1mm	m2	2157	89.90	$0.23	$20.68	
	Fibrglass insul RSI-3.5 (ex. walls)	batt	1202	50.10	$1.98	$99.20	
	Acoustic Insul.-3.5 (int. walls)	batt	3768	157.00	$1.98	$310.86	
	Polystyrene Insul 50mm	m2	131	5.46	$6.88	$37.56	
	SUBTOTAL						$468.30
9	**EXTERIOR FINISHES**						
	Black bldg paper #15	m2	936	39.00	$0.27	$10.53	$10.53
9.1	**STUCCO**						
	Stucco	m3	16	0.67	$160.00	$106.40	
	Parging	m3	0.67	0.03	$80.00	$2.24	
	Galvanized wire mesh 50x50	m2	760	31.64	$0.96	$30.37	
	Nails 30mm galv roofing	kg	16	0.66	$2.84	$1.87	
	SUBTOTAL						$140.89
9.2	**CEDAR COLUMNS**						
	19x140 Cedar	m	231.00	9.63	$2.25	$21.66	
	Galvanized nails, 51mm	kg	5.00	0.21	$4.65	$0.98	
	SUBTOTAL						$22.63

Table 2.7 (Continued)
Building Material Costs for Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
9.3	**ALUMINIUM FASCIA**						
	Aluminium siding	m2	113.00	4.71	$38.35	$180.56	
	Starter strip	m	94.00	3.92	$2.40	$9.40	
	Nails,aluminium	kg	4.80	0.20	$9.00	$1.80	
	SUBTOTAL						$191.76
9.7	**SOFFITS**						
	Vented alum panels 406mm exposed face	m	165	6.88	$3.35	$23.05	
9.9	Acrylic sealant (300ml)	tubes	137	5.70	$3.90	$22.23	
	SUBTOTAL						$45.28
10	**EXTERIOR DOORS & FRAMES**						
	SCW dr & stl frm + sidelite 20min label 0.9 x 2.1	item	8	0.33	$680.00	$224.40	
	SCW dr+stl frm 0.9 x 2.1	item	25	1.04	$450.00	$468.00	
	Prehung SCW dr+wd frm 0.85 x 2.1	item	24	1.00	$365.00	$365.00	
	Hollow metal dr+stl frame 1 hr rated 0.9 x 2.1	item	18	0.75	$250.00	$187.50	
10.11	Patio door 2.4 x 1.8	item	18	0.75	$950.00	$712.50	
	Prehung glass & alum dr in alum frm + sidelites(commercial) 0.9 x 2.1 2 sidelites	item	3	0.12	$2,545.00	$305.40	
	SUBTOTAL						$2,262.80
	INTERIOR WALL/CEILING FINISHES						
11	**DRYWALL**						
11.1	Gypsum board 12.7mm	m2	4416	184.00	$1.95	$358.80	
	Gypsum board 15.9mm	m2	545	22.70	$2.54	$57.66	
	Gypsum bd 12.7mm Type X	m2	778	32.43	$2.33	$75.56	
	Gypsum bd 15.9mm Type X	m2	2184	91.00	$2.54	$231.14	
	Drywall tape	m	8688	362.00	$0.03	$9.05	

Table 2.7 (Continued)

Building Material Costs for Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
	Corner bead	m	1436	59.80	$0.40	$23.92	
	Joint filler	kg	2136	89.00	$0.60	$53.40	
	Ceiling texture spray	kg	840	35.00	$0.70	$24.50	
	Drywall screws 30mm	1000	13.248	0.55	$26.00	$14.35	
	Drywall screws 38mm	1000	77.232	3.22	$28.80	$92.68	
	SUBTOTAL						$941.06
	TILE						
11.6	Ceramic tile 100x100 glazed	m2	153.36	6.39	$22.60	$144.41	
	Tile adhesive	litre	144	6.00	$5.20	$31.20	
	Grout	kg	62.4	2.60	$3.08	$8.01	
	Silicone sealant,tube	300ml	24	1.00	$5.00	$5.00	
	SUBTOTAL						$188.62
12	**FLOORING**						
12.1	**CARPET**						
	Carpet, 8.56kg/m2 wt.	m2	1452	60.50	$17.93	$1,084.77	
	Foam underpad 8mm	m2	1452	60.50	$3.58	$216.59	
	Carpet grippers	m	1872	78.00	$0.33	$25.74	
	SUBTOTAL						$1,327.10
12.3	**RESILIENT FLOORING**						
	Sheet vinyl flooring	m2	408	17.00	$11.95	$203.15	
	Flooring adhesive	litre	43	1.80	$4.17	$7.51	
	SUBTOTAL						$210.66
13	**PAINTING**						
13.1	Latex paint eggshell finish	litre	2779	115.80	$5.00	$579.00	$579.00
14.1	**MILLWORK (CABINETWORK)**						
	Int hollow core wood doors, wood frames 711x2032	item	24	1.00	$68.00	$68.00	

Table 2.7 (Continued)

Building Material Costs for Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
	762x2032	item	24	1.00	$68.00	$68.00	
	SUBTOTAL						$136.00
14.3	Closet bifold wd drs & hdwr						
	2032 x 1800	item	28	1.17	$81.00	$94.53	
	2032 x 1500	item	14	0.58	$76.80	$44.54	
	2032 x 1200	item	6	0.25	$72.00	$18.00	
	2032 x 914	item	14	0.58	$40.50	$23.49	
	2032 x 610	item	16	0.67	$36.00	$24.12	
	SUBTOTAL						$204.68
14.6	WINDOW/DOOR TRIM						
	Unfin wood casing 12.7x50	m	1104	46.00	$0.74	$34.04	
	25mm finishing nails	kg	2.4	0.10	$3.40	$0.34	
	SUBTOTAL						$34.38
14.7	BASEBOARD						
	Unfin wd baseboard 12.7x70	m	2784	116.00	$0.82	$95.12	$95.12
14.8	BATHROOM VANITIES						
	Wood cabinet & top	m	29	1.20	$278.85	$334.62	$334.62
14.9	KITCHEN CUPBOARDS						
	Lower cupboards	m	70	2.90	$297.00	$861.30	
	Upper cupboards	m	99	4.13	$150.00	$619.50	
	Range hood	item	24	1.00	$84.00	$84.00	
	SUBTOTAL						$1,564.80
14.1	CUPBOARD & CLOSET SHELVES						
	Plywd c/w hardwd nosing	m	504	21.00	$11.20	$235.20	$235.20
14.11	CLOTHES ROD - Closets						
	Chrm plated rod 25mm diam	m	72	3.00	$5.10	$15.30	$15.30

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
15	**HARDWARE**						
	Entry lockset, res. std	item	25	1.05	$29.99	$31.49	
	Security deadbolt	item	25	1.05	$16.50	$17.33	
	Privacy lockset, res. std.	item	24	1.00	$23.29	$23.29	
	Passage latchset, res. std.	item	81	3.38	$15.56	$52.59	
	Door closer	item	11	0.46	$18.99	$8.74	
	SUBTOTAL						$133.43
16	**BATHROOM ACCESSORIES**						
16.1	Toilet paper holder, chrome	item	24	1.00	$6.80	$6.80	
16.2	Towel bar chrome 610mm	item	48	2.00	$8.80	$17.60	
16.3	Mirror c/w clips 6x12x900	item	24	1.00	$20.00	$20.00	
16.4	Shower rod, chrome 25mm	item	24	1.00	$12.80	$12.80	
16.7	Soap dish & grab, metal	item	24	1.00	$9.60	$9.60	
16.8	Medicine cabinet	item	24	1.00	$65.00	$65.00	
16.9	Robe hook, chrome	item	48	2.00	$2.60	$5.20	
	SUBTOTAL						$137.00
17	**MISCELLANEOUS ITEMS**						
17.2	Mailbox 810x450 (24 boxes)	item	1	0.04	$749.00	$29.96	$29.96
	SUBTOTAL, architectural per apartment						$15,742.18

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
20	**PLUMBING**							
20.1	**TOILETS Crane Radcliffe white**		item	24	1.00	$108.94	$108.94	
	Beneke 2000 closet seat, white		item	24	1.00	$7.27	$7.27	
	Setting seal radiator specialty, G-230		item	24	1.00	$0.93	$0.93	
	Flexible supplies	30cm	item	24	1.00	$1.09	$1.09	
	Escutcheons copper	15mm	item	92	3.83	$0.15	$0.58	
	R19 stops	15mm	item	140	5.83	$2.44	$14.23	
	SUBTOTAL							**$133.04**
20.2	**SINK - Crane Coronette white, 1-306**		item	32	1.33	$46.73	$62.31	
	Emco 4" center set 2-0107		item	32	1.33	$25.93	$34.57	
	Emco pop-up drain, 2123		item	32	1.33	$14.60	$19.47	
	Flexible supplies	30cm	item	116	4.83	$6.84	$33.06	
	Chrome P traps	25mm	item	3	0.13	$12.31	$1.54	
	SUBTOTAL							**$150.95**
20.3	**ENAMELLED STEEL BATHTUB**							
	CRANE Chateau white, 2-142		item	24	1.00	$240.06	$240.06	
	Tub filler roughing-in, Emco 2271		item	24	1.00	$38.13	$38.13	
	Tub filler trim, Emco 2270		item	24	1.00	$34.54	$34.54	
	Bath drain Emco, 2800	40mm	item	24	1.00	$27.45	$27.45	
	SUBTOTAL							**$340.18**
20.4	**KITCHEN DBL SINKS**							
	compartment Stainless Steel Queen QDL203		item	25	1.04	$137.07	$142.78	
	Continuous wastes Belanger end out	40m	item	25	1.04	$15.37	$16.01	
	Emco 2160 deck faucets		item	25	1.04	$31.66	$32.98	
	1 1/2" brass traps		item	25	1.04	$11.88	$12.38	

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
	SUBTOTAL							$204.15
20.7	**HOT WATER TANK, O.A. Smith**							
	c/w pressure relief valve		item	1	0.04	$1,672.80		$69.70
20.8	**ABS PLASTIC PIPING UNDER GROUND**							
	Elbows ABS	50mm	item	18	0.75	$1.31	$0.98	
	Elbows ABS	75mm	item	3	0.13	$3.09	$0.39	
	Elbows ABS	100mm	item	27	1.13	$6.20	$6.98	
	Elbows ABS	100x75mm	item		0.00	$8.02	$0.00	
	Y's, TY's, Str. & Red.	50mm	item	1	0.04	$1.95	$0.08	
	Y's, TY's, Str. & Red.	75mm	item	4	0.17	$3.71	$0.62	
	Y's, TY's, Str. & Red.	100mm	item	10	0.42	$8.82	$3.68	
	Tube End Cleanouts	100mm	item	2	0.08	$6.97	$0.58	
	Closet flange c/w plate	100mm	item	6	0.25	$5.46	$1.37	
	P trap deap seal	100mm	item	1	0.04	$21.46	$0.89	
	Bushings	100x75mm	item	1	0.04	$3.23	$0.13	
	Tototec Smith floor drain	100mm	item	1	0.04	$42.69	$1.78	
	Brass floor access door	200x299mm	item	1	0.04	$38.33	$1.60	
	Pipe ABS	50mm	item	5	0.21	$4.13	$0.86	
	Pipe ABS	75mm	item	3	0.13	$7.87	$0.98	
	Pipe ABS	100mm	m	65	2.71	$12.10	$32.78	
	ABS Solvent	1,14 l	l	2	0.08	$7.19	$0.60	
	PVC test caps	100mm	item	6	0.25	$1.30	$0.33	
	PVC test caps	75mm	item	8	0.33	$0.96	$0.32	
	PVC test caps	50mm	item	8	0.33	$0.71	$0.24	
	SUBTOTAL							$55.17
20.8	**ALUMINUM PIPE SOIL PIPE AND FITTINGS ABOVE SLAB**							
	Bends JM, 1/4,1/8,1/6.1/16	50m	item	24	1.00	$4.42	$4.42	
	Bends JM, 1/4,1/8,1/6.1/16	75m	item	31	1.29	$6.20	$8.01	

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT	BUILDING	UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
	Y'S, TY'S, Red. or Str.	50m	item	12	0.50	$6.36	$3.18	
	Y'S, TY'S, Red. or Str.	75m	item	13	0.54	$9.65	$5.23	
	Tapped Y or TY	50m	item	18	0.75	$10.35	$7.76	
	Tap side outlet	75x75x40m	item	20	0.83	$22.94	$19.12	
	Reducers	75m	item	12	0.50	$4.78	$2.39	
	Increasers	50x100m	item	7	0.29	$12.10	$3.53	
	Cleanouts, Barret	50m	item	6	0.25	$25.46	$6.37	
	Cleanouts, Barret	75m	item	7	0.29	$31.37	$9.15	
	Deap seal trap	100x75mm	item	1	0.04	$41.06	$1.71	
	M.J. clamps	50mm	item	154	6.42	$3.11	$19.96	
	M.J. clamps	75mm	item	131	5.46	$3.54	$19.32	
	Aluminum adapter ring	50mm	item	146	6.08	$0.42	$2.56	
	Aluminum adapter ring	75mm	item	123	5.13	$0.48	$2.46	
	Flat Hi boot alum. flashings	100mm	item	7	0.29	$14.09	$4.11	
	Lead stubs	100 x75x300mm	item	18	0.75	$22.30	$16.73	
	Aluminum pipe (soil)	50mm	m	66	2.75	$11.15	$30.66	
	Aluminum pipe (soil)	75mm	m	57	2.38	$14.43	$34.27	
	Flior drain Roto Tech Smith	100mm	item	1	0.04	$42.69	$1.78	
	Clevis hangers	75mm	item	6	0.25	$2.95	$0.74	
	Lag rods	3/8 x 6	item	6	0.25	$1.27	$0.32	
	Riser clamps	75mm	item	21	0.88	$3.11	$2.72	
	Perforated suspension strap	19mm	m	10	0.42	$1.02	$0.43	
	SUBTOTAL							$206.90
20.8	DRAIN WASTE & VENTS - COPPER							
	C x C couplings DWV	30mm	item	14	0.58	$1.48	$0.86	
	C x C couplings DWV	40mm	item	13	0.54	$2.02	$1.09	
	C x C couplings DWV	50mm	item	2	0.08	$2.79	$0.23	
	C x MIP adpt. DVW	30mm	item	6	0.25	$4.40	$1.10	
	C x MIP adpt. DVW	40mm	item	48	2.00	$5.14	$10.28	
	C x C, 90 deg Ell	30mm	item	50	2.08	$3.55	$7.40	

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
	C x C, 90 deg Ell	40mm	item	52	2.17	$3.59	$7.78	
	C x C, 90 deg Ell	50mm	item	3	0.13	$6.81	$0.85	
	C x C, 45 deg Ell	30mm	item	13	0.54	$3.14	$1.70	
	C x C, 45 deg Ell	40mm	item	10	0.42	$2.65	$1.10	
	C x C, 45 deg Ell	50mm	item	1	0.04	$6.26	$0.26	
	Line cleanout DWV	40mm	item	3	0.13	$14.22	$1.78	
	Line cleanout DWV	50mm	item	5	0.21	$22.61	$4.71	
	Double TY's	40mm	item	4	0.17	$15.31	$2.55	
	P traps brass c/w cleanout	40mm	item	18	0.75	$15.38	$11.54	
	P traps brass c/w cleanout	50mm	item	1	0.04	$29.11	$1.21	
	Drum trap brass	40mm	item	6	0.25	$31.75	$7.94	
	Copper pipe DWV	30mm	m	72	3.00	$7.51	$22.53	
	Copper pipe DWV	40mm	m	75	3.13	$9.35	$29.21	
	Copper pipe DWV	50mm	m	4	0.17	$12.30	$2.05	
	Increasers	100mx30mm	item	5	0.21	$12.10	$2.52	
	Solder		lbs	3	0.13	$5.21	$0.65	
	Flux, Kester Paste		lbs	1	0.04	$4.51	$0.19	
	Plumber roll	Roll	item	3	0.13	$3.04	$0.38	
	Propane	1 L	item	3	0.13	$3.99	$0.50	
	Copper suspension strap	15mm	m	10	0.42	$8.63	$3.60	
	SUBTOTAL							$124.02
20.8	**HOT WATER HEATING (HWH)**							
	MAINS, RUNOUTS, BOILER ROOM							
	Black Malleable fittings, 90 or 45 Ells, 30mm		item	23	0.96	$1.73	$1.66	
	Black Malleable fittings, 90 or 45 Ells, 50mm		item	15	0.63	$3.19	$1.99	
	Tees, Str. or Red.	40mm	item	2	0.08	$3.39	$0.28	
	Tees, Str. or Red.	50mm	item	9	0.38	$4.96	$1.86	
	Unions	50mm	item	2	0.08	$6.16	$0.51	
	Bushings	80mm	item	2	0.08	$5.90	$0.49	
	Nipples	30mm	item	8	0.33	$0.82	$0.27	

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
	Nipples	50mm	item	21	0.88	$1.29	$1.13	
	Couplings, Black	30mm	item	12	0.50	$1.54	$0.77	
	Couplings, Black	40mm	item	2	0.08	$2.00	$0.17	
	Couplings, Black	50mm	item	8	0.33	$2.70	$0.90	
	Pipe A53 continuous weld	30mm	m	72	3.00	$4.13	$12.40	
	Pipe A53 continuous weld	40mm	m	8	0.33	$4.95	$1.65	
	Pipe A53 continuous weld	50mm	m	50	2.08	$6.82	$14.21	
	Suspension strap	19m	m	10	0.42	$1.02	$0.43	
	Cutting oil ridgid	4.6l	l	2	0.08	$9.05	$0.75	
	Jet lube 60 lubricant	224 ml	item	3	0.13	$9.10	$1.14	
	Teflon tape	1/2 x 520"	item	4	0.17	$0.46	$0.08	
	Angle Iron	30x30x5mm	m	10	0.42	$2.39	$1.00	
	All thread rod	5mm	m	7	0.29	$0.39	$0.11	
	Hex nuts & washers & capscrews	5mm	item	30	1.25	$0.03	$0.04	
	Elbows, C x C	20m	item	20	0.83	$0.76	$0.63	
	Tees, C x C	20mm	item	54	2.25	$1.41	$3.17	
	Tees, C x C	25mm	item	12	0.50	$5.22	$2.61	
	Tees, C x C	30mm	item	16	0.67	$8.02	$5.35	
	Bushings	20x15mm	item	8	0.33	$1.39	$0.46	
	Insulated couplings	30mm	item	8	0.33	$17.16	$5.72	
	Couplings C x C	20mm	item	18	0.75	$0.48	$0.36	
	Couplings C x C	25mm	item	6	0.25	$1.31	$0.33	
	Couplings C x C	30mm	item	2	0.08	$2.30	$0.19	
	Pipe, Type M	20mm	m	350	14.58	$3.54	$51.66	
	Pipe, Type M	25mm	m	25	1.04	$5.38	$5.60	
	Pipe, Type M	30mm	m	5	0.21	$7.87	$1.64	
	Solder 50-50	500g	item	2	0.08	$5.21	$0.43	
	Perforated suspension strap	10m	item	1	0.04	$8.63	$0.36	
	Propane Gas	1l	item	4	0.17	$3.99	$0.67	
	SUBTOTAL							$121.03

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
20.8	**DOMESTIC HOT AND COLD WATER - PIPING**							
	C x C, 90 deg Ells	15mm	item	200	8.33	$0.32	$2.67	
	C x C, 90 deg Ells	20mm	item	15	0.63	$0.76	$0.48	
	C x C, 90 deg Ells	25mm	item	8	0.33	$1.80	$0.60	
	C x C, 90 deg Ells	30mm	item	10	0.42	$3.57	$1.49	
	C x C, 90 deg Ells	40mm	item	6	0.25	$4.46	$1.12	
	Tee's C x C	15mm	item	24	1.00	$0.59	$0.59	
	Tee's C x C	20mm	item	124	5.17	$1.41	$7.29	
	Tee's C x C	25mm	item	17	0.71	$5.22	$3.70	
	Tee's C x C	30mm	item	8	0.33	$8.02	$2.67	
	Tee's C x C	40mm	item	5	0.21	$10.14	$2.11	
	C x M adapters	40mm	item	2	0.08	$7.63	$0.64	
	Caps, C x C	20mm	item	12	0.50	$0.48	$0.24	
	Copper pipe type M	15mm	m	237	9.88	$2.20	$21.70	
	Copper pipe type M	20mm	m	147	6.13	$3.54	$21.70	
	Copper pipe type M	25mm	m	39	1.63	$5.38	$8.74	
	Copper pipe type M	30mm	m	25	1.04	$7.87	$8.20	
	Copper pipe type M	40mm	m	12	0.50	$10.89	$5.44	
	Valves R & W Toya C x C	40mm	item	5	0.21	$22.47	$4.68	
	Insulated unions (EPCO)	30mm	item	2	0.08	$17.60	$1.47	
	Compression stops Emco, C x C	15	item	48	2.00	$2.64	$5.28	
	Compression stops Emco, C x C	20	item	4	0.17	$3.79	$0.63	
	Boiler drains, C x H	15	item	2	0.08	$2.40	$0.20	
	None freeze wall hydrants	20	item	2	0.08	$13.77	$1.15	
	Suspension strap copper	19m	m	20	0.83	$8.63	$7.19	
	Solder 50 x 50	500g	item	4	0.17	$5.21	$0.87	
	Kester paste	500g	item	1	0.04	$4.51	$0.19	
							$0.00	
	Domestic Hot and Cold water piping insulation fiber glass 25mm, c/w foil back, self seal						$0.00	
		25mm	m	33	1.38	$4.94	$6.79	
		30mm	m	25	1.04	$5.05	$5.26	

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
	•	40mm	m	12	0.50	$5.64	$2.82	
	3M adhesive	416g	item	2	0.08	$8.69	$0.72	
	SUBTOTAL							$126.61
20.8	**PIPE ACCESSORIES**							
	Automatic washer faucets, Waltec 29W521		item	2	0.08	$36.70		$3.06
20.8	**RAIN WATER LEADERS**							
	Reducers ABS	150mm	item	2	0.08	$16.69	$1.39	
	Barrett, C.O., M.J.	100mm	item	2	0.08	$43.37	$3.61	
	Aluminum pipe	100mm	m	25	1.04	$18.66	$19.44	
	M.J. clamps	100mm	item	24	1.00	$4.54	$4.54	
	M.J. clamps	150mm	item	2	0.08	$11.44	$0.95	
	M.J. 90 Ell's	100mm	item	4	0.17	$8.93	$1.49	
	Roof drains, M.J.	100mm	item	2	0.08	$77.15	$6.43	
	ABS, 45 ells	100mm	item	4	0.17	$33.34	$5.56	
	ABS, Y	150mm	item	2	0.08	$38.15	$3.18	
	ABS, 45 ells	100mm	item	4	0.17	$6.20	$1.03	
	ABS, C.O.	150mm	item	1	0.04	$12.64	$0.53	
	ABS Pipe	150mm	m	27	1.13	$21.65	$24.36	
	ABS couplings	150mm	item	4	0.17	$14.53	$2.42	
	Sheet lead	900x900mm	item	2	0.08	$62.32	$5.19	
	ABS solvent, cement	1.14L	item	1	0.04	$7.78	$0.32	
	Riser clamps	150mm	item	6	0.25	$6.43	$1.61	
	Clevis hangers	100m	item	4	0.17	$1.81	$0.30	
	Lag rods	5x300mm	item	4	0.17	$1.50	$0.25	
	SUBTOTAL							$82.60
20.8	**DOMESTIC HOT WATER RECIRCULATING LINE**							

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/UNIT	$ VALUE	SUBTOTALS
	3/4" Bronze circulator, LR20AB		item	1	0.04	$226.65	$9.44	
	Steel fab bracket		item	1	0.04	$25.00	$1.04	
	C xM adapters	20mm	item	2	0.08	$1.39	$0.12	
	Red and white gates	20mm	item	2	0.08	$9.45	$0.79	
	Red and white check valve	20mm	item	1	0.04	$11.92	$0.50	
	C x C, 90's	20mm	item	6	0.25	$0.76	$0.19	
	C x C, Red. T	20mm	item	2	0.08	$1.41	$0.12	
	C x C Red. couplings	20mm	item	1	0.04	$1.39	$0.06	
	Copper pipe type M	20mm	m	24	1.00	$3.58	$3.58	
	C x C, couplings	20mm	item	6	0.25	$0.48	$0.12	
	Pipe insulation 25mm, c/w foil back,25mm		m	24	1.00		$0.00	
	3M adhesive	461g	item	1	0.04	$8.69	$0.36	
	Solder, 50 x 50	250g	item	1	0.04	$2.61	$0.11	
	Flux Kester paste	100g	item	1	0.04	$0.90	$0.04	
	Gas propane bottle	1/2l	item	1	0.04	$3.99	$0.17	
	SUBTOTAL							**$16.62**
	SUBTOTAL, plumbing per apartment							**$1,634.03**

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALKUP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/Unit	$ VALUE	SUBTOTALS
21	**HVAC**							
21.7	**BOILER O A Smith HW460 480,000**		item	1	0.04	$2,135.00	$88.96	
	Pumps, 1/3HP, 15'head, 50 GPM, HD3	50mm	item	2	0.08	$334.33	$27.86	
	Water make up valve, 1156F Watts	15mm	item	1	0.04	$31.43	$1.31	
	Dual backflow preventer BF290	15mm	item	1	0.04	$45.11	$1.88	
	Air eliminator	50mm	item	1	0.04	$55.11	$2.30	
	Low water cut-off McDonnell	25mm	item	1	0.04	$167.72	$6.99	
	Expansion tank, 12 x 58	30 PSI	item	1	0.04	$151.56	$6.32	
	Gauge glass mountings	15mm	item	1	0.04	$19.05	$0.79	
	Honeywell, indoor-outdoor				0.00		$0.00	
	controller T475A		item	1	0.04	$128.08	$5.34	
	Mark Hot 10B baseboard heater		m	250	10.42	$13.97	$145.52	
	Mark Hot 51x64mm element		m	202	8.42	$14.33	$120.61	
	SUBTOTAL							**$407.87**
21.7	**FURNACE MF18 force flow to vestibules**		item	2	0.08	$525.15	$43.76	
	Red and White, C x C gates	20mm	item	68	2.83	$9.45	$26.78	
	Honeywell control valves,				0.00			
	V80AC-1033 union ends	20mm	item	24	1.00	$56.15	$56.15	
	Danfoss valves c/w remote bulb	20mm	item	2	0.08	$80.65	$6.72	
	Red and White gates Toya	50mm	item	4	0.17	$37.53	$6.26	
	Red and White gates Toya	15mm	item	2	0.08	$7.55	$0.63	
	Air vents maid-o-mist, No. 7		item	8	0.33	$28.06	$9.35	
	SUBTOTAL							**$149.65**
21.4	**THERMOSTATS/Honeywell T922C1124**		item	24	1.00	$16.37	$16.37	
	Transformers, 8T72D1006		item	8	0.33	$15.38	$5.13	
	SUBTOTAL							**$21.50**

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALKUP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/Unit	$ VALUE	SUBTOTALS
21.10	**PIPE INSULATION**							
	Fiber glass foil back 25mm	30mm	m	72	3.00	$5.05	$15.15	
	Fiber glass foil back 25mm	40mm	m	72	3.00	$5.64	$16.92	
	Fiber glass foil back 25mm	50mm	m	50	2.08	$6.69	$13.94	
	3M adhesive spray	416g	item	2	0.08	$8.69	$0.72	
	SUBTOTAL							$46.73
21.11	**GAS LINES TO MAKE UP FURNACE/BOILER/HW HEATER**							
	Black malleable 90s	40mm	item	3	0.13	$2.27	$0.28	
	Black malleable Tee's	40mm	item	2	0.08	$3.39	$0.28	
	Black malleable 90s	30mm	item	3	0.13	$1.73	$0.22	
	Gas Cocks	25mm	item	3	0.13	$9.88	$1.24	
	Black mall tees	25mm	item	3	0.13	$1.77	$0.22	
	Black mall caps	25mm	item	3	0.13	$0.79	$0.10	
	Black mall unions	20mm	item	3	0.13	$1.97	$0.25	
	SCH, 40 black nipples	20mm	item	12	0.50	$0.46	$0.23	
	A53 cont. weld pipe	40mm	m	6	0.25	$4.95	$1.24	
	A53 cont. weld pipe	30mm	m	1	0.04	$4.13	$0.17	
	A53 cont. weld pipe	25mm	m	12	0.50	$3.15	$1.57	
	Clevis hangers	40mm	item	6	0.25	$0.64	$0.16	
	Lag rods	5mm	item	6	0.25	$1.50	$0.38	
	SUBTOTAL							$6.33
21.13	**RANGE HOODS**							
	Broan range hoods, series 5200	30"	item	24	1.00	$64.15	$64.15	
	Sheet metal booths	100mx 250mm	item	24	1.00	$2.42	$2.42	
	Galv. elbows	75mm	item	24	1.00	$1.23	$1.23	
	Galv. pipe	75mm	m	552	23.00	$2.10	$48.30	
	Roof jacks	100x 300mm	item	6	0.25	$10.50	$2.63	
	Duct tape, 50 meters	50mm	roll	1	0.04	$7.18	$0.30	

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALKUP APARTMENT BUILDING		UNIT	QTY	QTY/24	$/Unit	$ VALUE	SUBTOTALS
	Sheet metal screws	1/2x8	item	300	12.50	$0.02	$0.24	
	SUBTOTAL							$119.26
21.13	**BATHROOM EXHAUST FANS**							
	Broan 675 bathfans		item	24	1.00	$36.40	$36.40	
	Galv. elbows	75mm	item	72	3.00	$1.23	$3.69	
	Galv. pipe	75mm	m	624	26.00	$2.10	$54.60	
	Roof jacks	100x 300mm	item	6	0.25	$10.50	$2.63	
	Duct tape	50x 50mm	roll	1	0.04	$7.18	$0.30	
	Sheet metal screws 1/2 x #8		item	300	12.50	$0.02	$0.24	
	SUBTOTAL							$97.85
21.13	**DRYER VENTS**				0.00			
	Wall caps, c/w dampers	83x 254mm	item	2	0.08	$4.20	$0.35	
	Galv. 90 ells	100mm	item	8	0.33	$2.10	$0.70	
	Galv. pipe, 26 gauge	100mm	m	17	0.71	$3.44	$2.44	
	SUBTOTAL							$3.49
21.10	**INSULATION**							
	Foil faced isulation	20x 912mm	m	60	2.50	$4.56	$11.40	
	Duct tape	50mm	rolls	6	0.25	$7.18	$1.80	
	Screws, No. 8	12mm	item	100	4.17	$0.02	$0.08	
	SUBTOTAL							$13.27
	SUBTOTAL, HVAC per apartment							$865.95

Table 2.7 (Continued)
Building Material Costs for Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
22	ELECTRICAL						
22.1	EXTERIOR SERVICE						
	1600 MCMxLink Copper Wire	km	0.36	0.02	$16,198.00	$242.97	$242.97
22.2	CONDUIT						
	Plastic Conduit 150mm diameter	m	69.84	2.91	$59.64	$173.55	
	Plastic Conduit 20mm diameter	m	54.72	2.28	$3.17	$7.23	
	Plastic 90deg. Elbow 150mm dia.	item	2	0.08	$4.25	$0.35	
	60 Amp Double Pole Main Breaker	item	24	1.00	$42.50	$42.50	
	100 Amp Double Pole Main Breaker	item	2	0.08	$89.00	$7.12	
	SUBTOTAL						$230.75
22.3	MAIN SWITCH & BREAKER BOX						
	400 amp main panel with fuse switch	item	1.00	0.04	$3,402.00	$141.75	
	60 amp 16 circuit panel in each apartment	item	24.00	1.00	$44.00	$44.00	
	#6 Bare copper wire	100m	1.44	0.06	$160.70	$9.64	
	Screws #8 x 25mm	100	9.60	0.40	$3.83	$1.53	
	SUBTOTAL						$196.92
22.4	ELEC. CIRCUIT BREAKERS						
	15 amp Single pole breakers	item	120	5.00	$4.88	$24.40	
	15 amp Double pole breakers	item	48	2.00	$10.77	$21.54	
	15 amp Ground fault breakers	item	48	2.00	$53.50	$107.00	
	40 amp Double pole breakers	item	24	1.00	$42.50	$42.50	
	30 amp Double pole breakers	item	24	1.00	$42.50	$42.50	
	SUBTOTAL						$237.94
22.5	INSULATED WIRE						
	#12 X-Line Copper Wire	km	0.6096	0.03	$850.00	$21.59	
	9.5mm Flex	km	0.1829	0.01	$3,154.00	$24.03	
	12.7mm Cable Straps	100	14.4	0.60	$22.05	$13.23	
	25.4mm Cable Straps	100	1.68	0.07	$45.15	$3.16	
	Range Cable Connector	100	0.96	0.04	$105.10	$4.20	

Table 2.7 (Continued)
Building Material Costs for Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
	9.5mm Flex Connectors	100	0.06	0.00	$37.95	$0.09	
	Main Connectors	item	1632	68.00	$0.40	$27.20	
	2-14 Insulated Copper Wire	km	4.56	0.19	$1,188.00	$225.72	
	3-14 Insulated Copper Wire	km	1.104	0.05	$1,991.00	$91.59	
	3-6 Insulated Copper Wire	km	0.576	0.02	$10,797.00	$259.13	
	3-10 Insulated Copper Wire	km	0.1512	0.01	$4,108.00	$25.88	
	SUBTOTAL						$695.83
22.6	JUNCTION & OUTLET BOXES						
	1104 Switch Boxes	100	5.76	0.24	$161.80	$38.83	
	100mm Octogon Boxes	100	233	0.10	$205.85	$19.97	
	100mm Deep Square Boxes	100	0.54	0.02	$377.85	$8.50	
	Duplex Plugs 110V	100	3.84	0.16	$92.75	$14.84	
	Duplex Plug Cover Plates	100	3.6	0.15	$29.75	$4.46	
	Water Proof Plug Covers	100	0.24	0.01	$201.25	$2.01	
	40A/220V Plub	100	0.24	0.01	$472.50	$4.73	
	SUBTOTAL						$93.34
22.7	SWITCHES						
	Single Pole Switches 110V	100	1.92	0.08	$127.75	$10.22	
	2 Gang Switch Plates	100	0.24	0.01	$59.50	$0.60	
	Single Switch Plates	100	1.44	0.06	$29.75	$1.79	
	SUBTOTAL						$12.60
22.8	LIGHT FIXTURES						
	Emergency Lights Double Head	item	14	0.58	$103.36	$59.95	
	Bedroom	item	36	1.50	$15.00	$22.50	
	Kitchen	item	24	1.00	$100.00	$100.00	
	Bathroom	item	24	1.00	$50.00	$50.00	
	Exterior	item	2	0.08	$35.00	$2.92	
	Utility	item	2	0.08	$10.00	$0.83	
	SUBTOTAL						$236.20
22.1	TELEPHONE PLATE	item	24	1.00	$0.80	$0.80	$0.80

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY	QTY/APT	$/UNIT	$ VALUE	SUBTOTALS
22.16	SECURITY SYSTEMS						
	Fire Alarm Bells	item	12	0.50	$36.30	$18.15	
	Pull Station	item	12	0.50	$20.90	$10.45	
	Exit Lights	item	8	0.33	$26.34	$8.69	
	8 Circuit Annunciator	item	1	0.04	$1,290.00	$51.60	
	SUBTOTAL						$88.89
	SUBTOTAL, electrical per apartment						$2,036.25

Table 2.7 (continued)
Building Material Costs For Walk Up Apartment

SUMMARY - Walk Up Apartment

Architectural	$15,742.18	
Mechanical - Plumbing	$1,634.03	
Mechanical - HVAC	$865.95	
Electrical	$2,036.25	
GRAND TOTAL -		**$20,278.40**

Table 2.8

Projected Quantities of Residential Building Products
Used in Single Detached House Construction for 1989-1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
1	FOUNDATION									
1.1	CONCRETE FOUNDATION (95%)									
	20 Mpa Concrete - footings & fdn walls	m3	19	$85.00	216600	$18,411,000	234650	$19,945,250	225625	$19,178,125
	20 Mpa Concrete - grade beams	m3	4	$85.00	45600	$3,876,000	49400	$4,199,000	47500	$4,037,500
	300mm dia. reinf. poured conc. piles	item	21	$31.40	239400	$7,517,160	259350	$8,143,590	249375	$7,830,375
	150mm compacted sand	m3	25	$6.60	285000	$1,881,000	308750	$2,037,750	296875	$1,959,375
	6 mil vapour barrier	m2	164	$0.32	1869600	$598,272	2025400	$648,128	1947500	$623,200
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	1026000	$6,535,620	1111500	$7,080,255	1068750	$6,807,938
	100mm conc, garage, sidewalk & driveway	m2	74	$9.25	843600	$7,803,300	913900	$8,453,575	878750	$8,128,438
	Form plywood 19mm spruce	m2	14	$20.00	159600	$3,192,000	172900	$3,458,000	166250	$3,325,000
	38x89 spruce whalers etc.	item	225	$0.29	2565000	$743,850	2778750	$805,838	2671875	$774,844
	Form ties	item	750	$0.15	8550000	$1,282,500	9262500	$1,389,375	8906250	$1,335,938
	Nails .89 coated	kg	2.5	$1.34	28500	$38,190	30875	$41,373	29688	$39,781
	Reinforcing steel bars 15mm	m	350	$0.96	3990000	$3,910,200	4322500	$4,236,050	4156250	$4,073,125
	Welded mesh reinforcing	m2	120	$0.96	1368000	$1,313,280	1482000	$1,422,720	1425000	$1,368,000
	Anchor bolts	item	50	$0.38	570000	$216,600	617500	$234,650	593750	$225,625
	4 mil Polyethylene protective sheet	m2	120	$0.23	1368000	$314,640	1482000	$340,860	1425000	$327,750
1.2	ALTERNATIVE - PRESERVED WOOD FOUNDATION (5%)									
	12.7 Prese. treated wall ply	m2	90	$8.70	54000	$469,800	58500	$508,950	56250	$489,375
	15.9 Prese. treated fir ply	m2	90	$9.30	54000	$502,200	58500	$544,050	56250	$523,125
	38x140 spruce - in board feet	bf	660	$0.57	396000	$225,720	429000	$244,530	412500	$235,125
	38x191 spruce - in board feet	bf	262	$0.57	157200	$89,604	170300	$97,071	163750	$93,338
	Hot dipped galv nails 89mm	kg	25	$1.41	15000	$21,150	16250	$22,913	15625	$22,031
	Hot dipped galv nails 89mm	kg	20	$1.41	12000	$16,920	13000	$18,330	12500	$17,625
	Hot dip galv iron strapping	item	50	$0.38	30000	$11,400	32500	$12,350	31250	$11,875
	Caulking/sealant	tube	26	$3.00	15600	$46,800	16900	$50,700	16250	$48,750
	20 Mpa Concrete - footings & fdn walls	m3	1	$85.00	600	$51,000	650	$55,250	625	$53,125
	300mm dia. reinf. poured conc. piles	item	21	$31.40	12600	$395,640	13650	$428,610	13125	$412,125
	150mm compacted sand	m3	25	$6.60	15000	$99,000	16250	$107,250	15625	$103,125
	6 mil vapour barrier	m2	164	$0.32	98400	$31,488	106600	$34,112	102500	$32,800
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	54000	$343,980	58500	$372,645	56250	$358,313
	100mm conc, garage, sidewalk & driveway	m2	74	$9.25	44400	$410,700	48100	$444,925	46250	$427,813
	Welded mesh reinforcing	m2	120	$0.96	72000	$69,120	78000	$74,880	75000	$72,000
	Polyethylene sheet	m2	210	$0.23	126000	$28,980	136500	$31,395	131250	$30,188
	Anchors	item	50	$0.69	30000	$20,700	32500	$22,425	31250	$21,563

Table 2.8 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Detached House Construction For 1989 -1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	FIREPLACE									
	c/w dual metal const extensions & elbows, cap, hearth & fam. cedar mantel	item	1	$1,148.50	12000	$13,782,000	13000	$14,930,500	12500	$14,353,250
	100mm clay brick veneer	m2	9	$43.50	108000	$4,698,000	117000	$5,089,500	112500	$4,893,750
2	DAMPPROOFING									
2.1	Asphalt emulsion	litre	36	$1.35	432000	$583,200	468000	$631,800	450000	$607,500
2.2	100mm Weeping tile	m	45	$3.86	540000	$2,084,400	585000	$2,258,100	562500	$2,171,250
	150mm crushed gravel	m3	25	$7.13	300000	$2,139,000	325000	$2,317,250	312500	$2,228,125
4	ENTRY STEPS									
	Precast conc steps 2 risers	item	1	$217.00	12000	$2,604,000	13000	$2,821,000	12500	$2,712,500
	Precast concrete brackets	item	1	$87.00	12000	$1,044,000	13000	$1,131,000	12500	$1,087,500
5	ROUGH CARPENTRY									
5.1	DIMENSION LUMBER									
	38X89 spruce	1000 bf	2.56	$294.00	30732	$9,035,208	33293	$9,788,142	32013	$9,411,675
	38X140 spruce	1000 bf	2.79	$309.00	33456	$10,337,904	36244	$11,199,396	34850	$10,766,650
	38X235 spruce	1000 bf	2.11	$549.00	25260	$13,867,740	27365	$15,023,385	26313	$14,445,803
	38X38 spruce	1000 bf	0.12	$369.00	1440	$531,360	1560	$575,640	1500	$553,500
	19X140 spruce	1000 bf	0.04	$650.00	432	$280,800	468	$304,200	450	$292,500
5.2	SHEATHING MATERIAL									
	15.9mm T&G fir (floor)	m2	110	$6.45	1320000	$8,514,000	1430000	$9,223,500	1375000	$8,868,750
	12.7mm spruce plywood (roof)	m2	180	$4.36	2160000	$9,417,600	2340000	$10,202,400	2250000	$9,810,000
	8mm wafer board (walls)	m2	150	$2.68	1800000	$4,824,000	1950000	$5,226,000	1875000	$5,025,000
5.3	ADJ. STEEL POSTS	item	2	$32.99	24000	$791,760	26000	$857,740	25000	$824,750
5.5	PREMFD WOOD TRUSSES	item	34	$45.00	408000	$18,360,000	442000	$19,890,000	425000	$19,125,000
5.2.7	NAILS									
	51mm phosphate coated	kg	20	$2.21	240000	$530,400	260000	$574,600	250000	$552,500
	63.5mm phosphate coated	kg	10	$1.41	120000	$169,200	130000	$183,300	125000	$176,250
	89mm phosphate coated	kg	51	$1.34	612000	$820,080	663000	$888,420	637500	$854,250
	51mm hot dipped galv	kg	1	$2.05	12000	$24,600	13000	$26,650	12500	$25,625
	25mm annular	kg	1	$1.73	12000	$20,760	13000	$22,490	12500	$21,625
					1					
5.7	CEDAR DECK									
	89x89 pressure treated posts	m	1.2	1.93	14400	$27,792	15600	$30,108	15000	$28,950

Table 2.8 (Continued)
Projected Quantities of Residential Building Products
Used in Single Detached House Construction for 1989-1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
	38x184 pressure treated joists	m	31.1	2.36	373200	$880,752	404300	$954,148	388750	$917,450
	38x89 cedar decking	m	91	1.37	1092000	$1,496,040	1183000	$1,620,710	1137500	$1,558,375
	Cedar guard & handrail									
	-38x140 top rail	m	14.4	2.65	172800	$457,920	187200	$496,080	180000	$477,000
	-38x 89 bottom rail	m	14.4	1.37	172800	$236,736	187200	$256,464	180000	$246,600
	-38x38 vertical rails	m	140	$1.05	1680000	$1,764,000	1820000	$1,911,000	1750000	$1,837,500
5.8	CONSTRUCTION ADHESIVE	litre	20	$7.25	240000	$1,740,000	260000	$1,885,000	250000	$1,812,500
5.9	SHEATHING SCREWS	item	2600	$0.03	31200000	$936,000	33800000	$1,014,000	32500000	$975,000
5.11	WOOD STAIR	risers	23	$17.30	276000	$4,774,800	299000	$5,172,700	287500	$4,973,750
6	ROOFING									
6	ASHALT SHINGLES (80%)									
	Asphalt shingles @ 32SF/bundle	bundles	61	$9.79	585600	$5,733,024	634400	$6,210,776	610000	$5,971,900
	Black bldg felt #15	m2	180	$0.27	1728000	$466 560	1872000	$505,440	1800000	$486,000
	Roofing nails	kg	20	$2.30	192000	$441,600	208000	$478,400	200000	$460,000
	Tab down cement	litre	10	$1.35	96000	$129,600	104000	$140,400	100000	$135,000
6.2	ALTERNATE ROOFING - CEDAR SHINGLES (20%)									
	bundles for 180 m2 (1976.6 SF) @ 20SF	bundle	98	$21.00	185220	$3,889,620	200655	$4,213,755	192938	$4,051,688
	Black building paper #15	m2	180	$0.27	340200	$91,854	368550	$99,509	354375	$95,681
	Roofing nails	kg	20	$2.30	37800	$86,940	40950	$94,185	39375	$90,562
6.4	FLASHING									
	Alum prefin flashing	m	72	$2.27	864000	$1,961,280	936000	$2,124,720	900000	$2,043,000
6.5	EAVESTROUGHS & DOWNSPOUTS									
	Alum eavestroughs	m	72	$2.42	864000	$2,090,880	936000	$2,265,120	900000	$2,178,000
	Alum prefin end caps	units	4	$0.35	48000	$16,800	52000	$18,200	50000	$17,500
	Alum prefin out drops	units	7	$0.70	84000	$58,800	91000	$63,700	87500	$61,250
	Alum prefin elbows	units	14	$1.25	168000	$210,000	182000	$227,500	175000	$218,750
	Alum prefin downspouts	m	35	$2.42	420000	$1,016,400	455000	$1,101,100	437500	$1,058,750
	Alum ferrules	units	72	$0.20	864000	$172,800	936000	$187,200	900000	$180,000
7	WINDOWS									
	Window - wood frame, alum sash, D/G horiz slider 1300x900mm	unit	2	$245.00	24000	$5,880,000	26000	$6,370,000	25000	$6,125,000
	Window - wood frame, alum	unit	2	$268.00	24000	$6,432,000	26000	$6,968,000	25000	$6,700,000

Table 2.8 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Detached House Construction For 1989 -1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	sash, D/G horiz slider 1500x900mm									
	Window - wood frame, alum sash, D/G slider 1200x900mm	unit	4	$235.00	48000	$11,280,000	52000	$12,220,000	50000	$11,750,000
	Window - wood frame, alum clad, 2400x1700mm,fixed	unit	1	$380.00	12000	$4,560,000	13000	$4,940,000	12500	$4,750,000
8	**INSULATION & VAPOUR BARRIER**									
8.1	6 mil Polyethylene sheeting	m2	325	$0.23	3900000	$897,000	4225000	$971,750	4062500	$934,375
	Fibrous batt insulation:									
	RSI-2.1	batts	300	$1.91	3600000	$6,876,000	3900000	$7,449,000	3750000	$7,162,500
	RSI-3.5	batts	300	$1.98	3600000	$7,128,000	3900000	$7,722,000	3750000	$7,425,000
8.6	Treated cellulose RSI-6 (attic)	m3	30	$17.63	360000	$6,346,800	390000	$6,875,700	375000	$6,611,250
9	**EXTERIOR FINISHES**									
9.1	**PARGING - Exterior Basement**									
	Parging wall above grade	m3	1	$80.00	12000	$960,000	13000	$1,040,000	12500	$1,000,000
	Galvanized wire mesh 50x50	m2	20	$0.96	240000	$230,400	260000	$249,600	250000	$240,000
	Nails 30mm galv roofing	kg	5	$1.73	60000	$103,800	65000	$112,450	62500	$108,125
9.5	**BRICKWORK - Front facade only (50%)**									
	100 Brick veneer facing	m2	44	$43.50	264000	$11,484,000	286000	$12,441,000	275000	$11,962,500
	Mortar c/w colorant	m3	1	$128.00	6000	$768,000	6500	$832,000	6250	$800,000
	Galvanized ties	item	2842	$0.04	17052000	$596,820	18473000	$646,555	17762500	$621,688
	Steel Lintels	m	15	$9.00	90000	$810,000	97500	$877,500	93750	$843,750
	Weep Vents	item	21	$0.32	126000	$40,320	136500	$43,680	131250	$42,000
	Black building paper #15	m2	44	$0.27	264000	$71,280	286000	$77,220	275000	$74,250
	VINYL SIDING (50%)									
	Alum prefinished fascia	m	72	$1.82	432000	$786,240	468000	$851,760	450000	$819,000
	Nails	kg	3	$9.00	18000	$162,000	19500	$175,500	18750	$168,750
	Vented alum panels 406mm exposed face	m	44	$3.35	264000	$884,400	286000	$958,100	275000	$921,250
	100mm vinyl siding	m2	136	$9.42	816000	$7,686,720	884000	$8,327,280	850000	$8,007,000
	Black building paper #15	m2	136	$0.27	816000	$220,320	884000	$238,680	850000	$229,500
9.1	**ALTERNATIVE - STUCCO (20%)**									
	Premixed stucco & scratchcoat	m3	3	$250.00	72 [illegible]	$1,800,000	7800	$1,950,000	7500	$1,875,000
	Galvanized wire mesh 50x50	m2	180	$0.96	432000	$414,720	468000	$449,280	450000	$432,000
	Nails, 30mm galv roofing	kg	50	$1.73	120000	$207,600	130000	$224,900	125000	$216,250
	Black building paper #15	m2	180	$0.27	432000	$116,640	468000	$126,360	450000	$121,500

Table 2.8 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Detached House Construction For 1989 -1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
9.2	**ALTERNATIVE- BEVELED CLEAR CEDAR SIDING (10%)**									
	190mm exposed face - in board feet	bf	1920	$1.71	2304000	$3,939,840	2496000	$4,268,160	2400000	$4,104,000
	Cedar trim boards 19x89 - in board feet	bf	40	$0.60	48000	$28,800	52000	$31,200	50000	$30,000
	Nails 51 galvanized	kg	7	$2.21	8400	$18,564	9100	$20,111	8750	$19,338
	Black building paper #15	m2	180	$0.27	216000	$58,320	234000	$63,180	225000	$60,750
9.3	**ALTERNATIVE - ALUMINUM SIDING (10%)**									
	Siding	m2	136	$38.35	163200	$6,258,720	176800	$6,780,280	170000	$6,519,500
	Alum starter strip	m	40	$0.74	48000	$35,520	52000	$38,480	50000	$37,000
	Alum outside corner post	m	9	$2.40	10800	$25,920	11700	$28,080	11250	$27,000
	Alum J mold	m	48	$0.74	57600	$42,624	62400	$46,176	60000	$44,400
	Alum prefinished fascia	m	72	$1.82	86400	$157,248	93600	$170,352	90000	$163,800
	Black building paper #15	m2	180	$0.27	216000	$58,320	234000	$63,180	225000	$60,750
	Nails	kg	3	$9.00	3600	$32,400	3900	$35,100	3750	$33,750
9.5	**ALTERNATIVE - BRICK (5%)**									
	100mm Brick Veneer	m2	180	$43.50	108000	$4,698,000	117000	$5,089,500	112500	$4,893,750
	Morter c/w colorant	m3	3	$128.00	1800	$230,400	1950	$249,600	1875	$240,000
	Galvanized ties	item	11628	$0.04	6976800	$279,072	7558200	$302,328	7267500	$290,700
	Steel lintels	m	16.5	$9.00	9870	$88,830	10693	$96,233	10281	$92,531
	Weep vents	item	83	$0.32	49800	$15,936	53950	$17,264	51875	$16,600
	Black building paper #15	m2	180	$0.27	108000	$29,160	117000	$31,590	112500	$30,375
9.9	**Acrylic sealant caulking (300ml)**	tubes	30	$3.90	360000	$1,404,000	390000	$1,521,000	375000	$1,462,500
10	**EXTERIOR DOORS & FRAMES**									
10.10	Insulated metal door & wood frame	item	1	$295.00	12000	$3,540,000	13000	$3,835,000	12500	$3,687,500
10.1	Aluminum storm door	item	1	$250.00	12000	$3,000,000	13000	$3,250,000	12500	$3,125,000
10.1	Patio door 1800x2100	item	1	$685.00	12000	$8,220,000	13000	$8,905,000	12500	$8,562,500
10.6	Weatherstripping Threshold	m	1	$5.20	12000	$62,400	13000	$67,600	12500	$65,000
10.6	Weatherstrip door perimeter	m	6	$5.40	72000	$388,800	78000	$421,200	75000	$405,000
10.10	Sectional o/h garage door 4860x2130mm	item	1	$555.00	12000	$6,660,000	13000	$7,215,000	12500	$6,937,500
10.10	Uninsulated metal door to garage	item	1	$100.00	12000	$1,200,000	13000	$1,300,000	12500	$1,250,000
11	**INTERIOR WALL/CEILING FINISHES**									
11.1	Drywall									
	Gypsum board 12.7mm	m2	580	$1.95	6960000	$13,572,000	7540000	$14,703,000	7250000	$14,137,500
	Drywall tape	m	1400	$0.03	16800000	$420,000	18200000	$455,000	17500000	$437,500
	Corner bead	m	60	$0.40	720000	$288,000	780000	$312,000	750000	$300,000
	Joint filler	kg	150	$0.60	1800000	$1,080,000	1950000	$1,170,000	1875000	$1,125,000
	Ceiling texture spray	kg	50	$0.70	600000	$420,000	650000	$455,000	625000	$437,500

Table 2.8 (Continued)
Projected Quantities of Residential Building Products
Used in Single Detached House Construction for 1989-1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
	Drywall screws	items	4680	$0.03	56160000	$1,684,800	60840000	$1,825,200	58500000	$1,755,000
11.6	**TILE**									
	Ceramic tile	m2	9	$22.60	108000	$2,440,800	117000	$2,644,200	112500	$2,542,500
	Tile adhesive	litre	8	$5.20	96000	$499,200	104000	$540,800	100000	$520,000
	Grout	kg	3	$3.08	36000	$110,880	39000	$120,120	37500	$115,500
	Silicone sealant	tube	1	$5.00	12000	$60,000	13000	$65,000	12500	$62,500
	6.3mm particle board for ceramic tile flr	m2	22	$6.27	264000	$1,391,280	286000	$1,507,220	275000	$1,449,250
12	**FLOORING**									
12.1	**CARPET**									
	Carpet, 32 oz. 100% nylon	m2	112	$17.93	1344000	$24,097,920	1456000	$26,106,080	1400000	$25,102,000
	Foam underpad 6mm	m2	112	$3.58	1344000	$4,811,520	1456000	$5,212,480	1400000	$5,012,000
	Carpet grippers	m	160	$0.33	1920000	$633,600	2080000	$686,400	2000000	$660,000
12.3	**RESILIENT FLOORING**									
	Sheet vinyl flooring - Kit/Bath/Din Rm	m2	47	$11.95	564000	$6,739,800	611000	$7,301,450	587500	$7,020,625
	Flooring adhesive	litre	5	$4.17	60000	$250,200	65000	$271,050	62500	$260,625
13	**PAINTING - Exterior 2 coats**									
	Enamel windows, doors, trim	litre	2	$10.00	24000	$240,000	26000	$260,000	25000	$250,000
	Paint garage door & frame	litre	4	$10.00	48000	$480,000	52000	$520,000	50000	$500,000
	Stain finish cedar decking	litre	2	$7.00	24000	$168,000	26000	$182,000	25000	$175,000
	Stain finish rail	litre	5	$7.00	60000	$420,000	65000	$455,000	62500	$437,500
	PAINTING - Interior 2 coats									
	Enamel windows, doors, trim	litre	8	$10.00	96000	$960,000	104000	$1,040,000	100000	$1,000,000
	Semigloss or flat latex to drywall	litre	64	$9.00	768000	$6,912,000	832000	$7,488,000	800000	$7,200,000
	Stain finish doors & frames	litre	10	$9.00	120000	$1,080,000	130000	$1,170,000	125000	$1,125,000
	Stain finish bifold doors & frames	litre	2	$7.00	24000	$168,000	26000	$182,000	25000	$175,000
	Semigloss baseboards & shelves	litre	10	$10.00	120000	$1,200,000	130000	$1,300,000	125000	$1,250,000
	Stain finish handrails	litre	1	$7.00	12000	$84,000	13000	$91,000	12500	$87,500
	Stain finish balustrade	litre	1	$7.00	12000	$84,000	13000	$91,000	12500	$87,500
14	**MILLWORK**									
14.1	Int hollow core wood doors, wood frames									
	2032x711mm	item	3	$68.00	36000	$2,448,000	39000	$2,652,000	37500	$2,550,000
	2032x762mm	item	6	$68.00	72000	$4,896,000	78000	$5,304,000	75000	$5,100,000
14.3	**CLOSET DOORS - wood bifold c/w hardware**									
	2032x610mm	item	8	$36.00	96000	$3,456,000	104000	$3,744,000	100000	$3,600,000
	2032x750mm	item	2	$38.40	24000	$921,600	26000	$998,400	25000	$960,000

Table 2.8 (Continued)
Projected Quantities of Residential Building Products
Used in Single Detached House Construction for 1989-1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	2032x914mm	item	2	$40.50	24000	$972,000	26000	$1,053,000	25000	$1,012,500
14.6	**WINDOW/DOOR TRIM**									
	Unfin wood casing 12.7x50mm	m	126	$0.74	1512000	$1,118,880	1638000	$1,212,120	1575000	$1,165,500
14.7	**BASEBOARD**									
	Unfin wood baseboard 12.7x70mm	m	227	$0.82	2724000	$2,233,680	2951000	$2,419,820	2837500	$2,326,750
14.8	**BATHROOM VANITIES**									
	Wood cabinet & countertop	m	2.7	$278.85	32400	$9,034,740	35100	$9,787,635	33750	$9,411,188
14.9	**KITCHEN CUPBOARDS**									
	Lower cupboards	m	4	$297.00	48000	$14,256,000	52000	$15,444,000	50000	$14,850,000
	Upper cupboards	m	4	$150.00	48000	$7,200,000	52000	$7,800,000	50000	$7,500,000
	Range hood	item	1	$84.00	12000	$1,008,000	13000	$1,092,000	12500	$1,050,000
14.10	**CUPBOARD & CLOSET SHELVES**									
	Plywood c/w hardwood nosing	m	13.9	$11.20	166800	$1,868,160	180700	$2,023,840	173750	$1,946,000
14.11	**CLOTHES ROD - Closets**									
	Chrome plated rod 25mm diam	m	21	$5.10	252000	$1,285,200	273000	$1,392,300	262500	$1,338,750
15	**HARDWARE**									
15.1	Entry lockset, house	item	2	$29.99	24000	$719,760	26000	$779,740	25000	$749,750
15.3	Privacy lockset, house	item	7	$23.29	84000	$1,956,360	91000	$2,119,390	87500	$2,037,875
15.4	Passage latchset, house	item	3	$15.56	36000	$560,160	39000	$606,840	37500	$583,500
15.7	Door stop	item	8	$1.09	96000	$104,640	104000	$113,360	100000	$109,000
	Security deadbolt	item	1	$16.50	12000	$198,000	13000	$214,500	12500	$206,250
	Mailbox	item	1	$14.00	12000	$168,000	13000	$182,000	12500	$175,000
	House numbers	item	5	$7.00	60000	$420,000	65000	$455,000	62500	$437,500
16	**BATHROOM ACCESSORIES**									
16.1	Toilet paper holder, chrome	item	3	$6.80	36000	$244,800	39000	$265,200	37500	$255,000
16.2	Towel bar chrome 610mm	item	3	$8.80	36000	$316,800	39000	$343,200	37500	$330,000
16.3	Mirror c/w clips 6x12x900mm	item	3	$20.00	36000	$720,000	39000	$780,000	37500	$750,000
16.7	Soap dish & grab, metal	item	2	$9.60	24000	$230,400	26000	$249,600	25000	$240,000
16.8	Medicine cabinet	item	3	$65.00	36000	$2,340,000	39000	$2,535,000	37500	$2,437,500
16.9	Robe hook, chrome	item	3	$2.60	36000	$93,600	39000	$101,400	37500	$97,500
	25mm diam. metal shower curtain rod	item	2	$12.80	24000	$307,200	26000	$332,800	25000	$320,000

Table 2.8 (Continued)
Projected Quantities of Residential Building Products
Used in Single Detached House Construction for 1989-1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
20	PLUMBING									
20.1	WATER CLOSETS									
	Water closet, Crane Radcliffe	item	3	$145.98	36000	$5,255,280	39000	$5,693,220	37500	$5,474,250
	Beneke 2000 closet seat, white	item	3	$7.27	36000	$261,720	39000	$283,530	37500	$272,625
	Setting seal radiateor G-230	item	3	$0.93	36000	$33,480	39000	$36,270	37500	$34,875
	Flexible supplies,30cm	item	3	$1.09	36000	$39,240	39000	$42,510	37500	$40,875
	Escutcheons copper,15mm	item	3	$0.15	36000	$5,400	39000	$5,850	37500	$5,625
	R19 stops,15mm	item	3	$2.44	36000	$87,840	39000	$95,160	37500	$91,500
20.2	ENAMELLED STEEL BATHROOM SINKS									
	Crane Coronette, white 1.306	item	3	$57.01	36000	$2,052,360	39000	$2,223,390	37500	$2,137,875
	Emco 4" centre set, 2-107	item	3	$31.64	36000	$1,139,040	39000	$1,233,960	37500	$1,186,500
	Emco pop-up drain, 2123	item	3	$17.81	36000	$641,160	39000	$694,590	37500	$667,875
	Flexible supplies c/w stops,30cm	set	3	$8.35	36000	$300,600	39000	$325,650	37500	$313,125
	Chrome P traps,25mm	item	3	$15.02	36000	$540,720	39000	$585,780	37500	$563,250
20.3	BATHTUB									
	Fibreglass tub/shower unit	item	2	$540.00	24000	$12,960,000	26000	$14,040,000	25000	$13,500,000
	Tub filler roughing-in, Emco 2271	item	2	$38.13	24000	$915,120	26000	$991,380	25000	$953,250
	Tub filler trim, Emco 2270	item	2	$34.54	24000	$828,960	26000	$898,040	25000	$863,500
	Bath drain Emco, 2900,40mm	item	2	$27.45	24000	$658,800	26000	$713,700	25000	$686,250
20.4	KITCHEN SINK									
	Dbl compartment stainless steel sinks, Steel Queen QDL 203	item	1	$167.23	12000	$2,006,760	13000	$2,173,990	12500	$2,090,375
	Continuous wastes	item	1	$18.75	12000	$225,000	13000	$243,750	12500	$234,375
	Belanger endout contin. waste	item	1	$18.75	12000	$225,000	13000	$243,750	12500	$234,375
	Emco 2160 deck faucets	item	1	$38.63	12000	$463,560	13000	$502,190	12500	$482,875
	1-1/2 brass P traps	item	1	$14.49	12000	$173,880	13000	$188,370	12500	$181,125
20.7	H/W HEATER, John Wood JW402	item	1	$307.26	12000	$3,687,120	13000	$3,994,380	12500	$3,840,750
20.8	PIPE, FITTINGS AND ACCESSORIES									
	Y's or Ty's ABS,100mm	item	5	$9.48	60000	$568,800	65000	$616,200	62500	$592,500
	Y's or Ty's ABS,75mm	item	8	$3.99	96000	$383,040	104000	$414,960	100000	$399,000
	Y's or Ty's ABS,50mm	item	4	$2.10	48000	$100,800	52000	$109,200	50000	$105,000
	Y's or Ty's ABS,40mm	item	3	$1.13	36000	$40,680	39000	$44,070	37500	$42,375
	Ells, 90 or 45 deg,100mm	item	7	$6.66	84000	$559,440	91000	$606,060	87500	$582,750
	Ells, 90 or 45 deg,75mm	item	11	$3.32	132000	$438,240	143000	$474,760	137500	$456,500

Table 2.8 (Continued)
Projected Quantities of Residential Building Products
Used in Single Detached House Construction for 1989-1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
	Ells, 90 or 45 deg,50mm	item	12	$1.41	144000	$203,040	156000	$219,960	150000	$211,500
	Ells, 90 or 45 deg,40mm	item	17	$0.88	204000	$179,520	221000	$194,480	212500	$187,000
	Couplings - ABS,100mm	item	3	$2.66	36000	$95,760	39000	$103,740	37500	$99,750
	Couplings - ABS,75mm	item	4	$1.43	48000	$68,640	52000	$74,360	50000	$71,500
	Couplings - ABS,50mm	item	3	$0.63	36000	$22,680	39000	$24,570	37500	$23,625
	Couplings - ABS,40mm	item	10	$0.41	120000	$49,200	130000	$53,300	125000	$51,250
	Pipe ABS,100mm	metre	7.6	$3.97	91200	$362,064	98800	$392,236	95000	$377,150
	Pipe ABS,75mm	metre	18.6	$2.58	223200	$575,856	241800	$623,844	232500	$599,850
	Pipe ABS,50mm	metre	10	$1.36	120000	$163,200	130000	$176,800	125000	$170,000
	Pipe ABS,40mm	metre	31	$0.95	372000	$353,400	403000	$382,850	387500	$368,125
	Clean Outs ABS Line,100mm	item	2	$13.59	24000	$326,160	26000	$353,340	25000	$339,750
	Clean Outs ABS Line,50mm	item	3	$4.44	36000	$159,840	39000	$173,160	37500	$166,500
	Clean Outs ABS Line,40mm	item	2	$2.70	24000	$64,800	26000	$70,200	25000	$67,500
	Traps, ABS,100x75mm	item	1	$25.04	12000	$300,480	13000	$325,520	12500	$313,000
	Trap Adapter,40mm	item	2	$1.14	24000	$27,360	26000	$29,640	25000	$28,500
	Trap deep seal,75mm	item	1	$12.28	12000	$147,360	13000	$159,640	12500	$153,500
	Line C.O,m ABS,50mm	item	1	$4.44	12000	$53,280	13000	$57,720	12500	$55,500
	Weeping tile c/w back water valve and c.o.,75mm	item	1	$67.91	12000	$814,920	13000	$882,830	12500	$848,875
	Traps, ABS,40mm	item	4	$2.37	48000	$113,760	52000	$123,240	50000	$118,500
	Increaser, ABS,100x75mm	item	2	$3.59	24000	$86,160	26000	$93,340	25000	$89,750
	Bushings, ABS,75mm	item	2	$2.20	24000	$52,800	26000	$57,200	25000	$55,000
	Expansion Joint ABS,75mm	item	1	$16.90	12000	$202,800	13000	$219,700	12500	$211,250
	Floor Flange,100x75mm	item	4	$5.87	48000	$281,760	52000	$305,240	50000	$293,500
	Flashing aluminum high cone,100mm	item	1	$12.73	12000	$152,760	13000	$165,490	12500	$159,125
	Test caps PVC,50mm	item	1	$0.76	12000	$9,120	13000	$9,880	12500	$9,500
	Floor drain grate, ABS,100mm	item	1	$6.26	12000	$75,360	13000	$81,640	12500	$78,500
	ABS cement	litre	1.9	$7.73	22800	$176,244	24700	$190,931	23750	$183,588
	ABS cleaner	litre	1	$5.74	12000	$68,880	13000	$74,620	12500	$71,750
	Suspension strap,20mm	metre	3	$3.29	36000	$118,440	39000	$128,310	37500	$123,375
	Stence access cover,150x150mm	item	2	$9.62	24000	$230,880	26000	$250,120	25000	$240,500
	Test cap,100mm	item	1	$1.40	12000	$16,800	13000	$18,200	12500	$17,500
	Test cap,75mm	item	1	$1.03	12000	$12,360	13000	$13,390	12500	$12,875
	Test cap,50mm	item	1	$0.76	12000	$9,120	13000	$9,880	12500	$9,500
	Copper pipe type M,15mm	m	12	$2.29	144000	$329,760	156000	$357,240	150000	$343,500
	Couplings C x C,15mm	item	4	$0.43	48000	$20,640	52000	$22,360	50000	$21,500
	90 deg Ells, C x C,15mm	item	10	$0.44	120000	$52,800	130000	$57,200	125000	$55,000
	Tees C x C,20mm	item	2	$1.95	24000	$46,800	26000	$50,700	25000	$48,750
	Tees C x C,15mm	item	5	$0.81	60000	$48,600	65000	$52,650	62500	$50,625
	Slope C x C,15mm	item	2	$4.17	24000	$100,080	26000	$108,420	25000	$104,250
	Drop eared ell,15mm	item	1	$2.18	12000	$26,160	13000	$28,340	12500	$27,250

Table 2.8 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Detached House Construction For 1989 -1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	Adapter, C x F,15mm	Item	1	$1.17	12000	$14,040	13000	$15,210	12500	$14,625
	Adapter, C x M,15mm	Item	2	$1.31	24000	$31,440	26000	$34,060	25000	$32,750
	Solder,100g	Item	1	$0.69	12000	$8,280	13000	$8,970	12500	$8,625
	Galv. Ells,75mm	Item	3	$1.56	36000	$56,160	39000	$60,840	37500	$58,500
	Galv. pipe, 20 ga.,75mm	m	2	$3.48	24000	$83,520	26000	$90,480	25000	$87,000
21	HVAC									
21.1	HEATING & VENTILATION									
	Valve Assembly	Item	1	$130.00	12000	$1,560,000	13000	$1,690,000	12500	$1,625,000
21.2	FORCED AIR FURNACE									
	Conventional Gas Fired Hot Air Furnace	Item	1	$767.00	12000	$9,204,000	13000	$9,971,000	12500	$9,587,500
21.3	DUCTING									
	Galvanized Sheet Metal Duct	m	37.5	$877.50	450000	$394,875,000	487500	$427,781,250	468750	$411,328,125
21.4	THERMOSTAT	Item	1	$19.50	12000	$234,000	13000	$253,500	12500	$243,750
21.5	HUMIDIFIER	Item	1	$113.75	12000	$1,365,000	13000	$1,478,750	12500	$1,421,875
21.9	FLEXIBLE DUCTING	Item	3	$11.38	36000	$409,680	39000	$443,820	37500	$426,750
21.10	DUCT INSULATION	m	9.5	$58.88	114000	$6,484,320	123500	$7,024,680	118750	$6,754,500
21.13	FANS									
	Bathroom Fan and Duct	Item	2	$78.00	24000	$1,872,000	26000	$2,028,000	25000	$1,950,000
	Range Hood Fan and Duct	Item	1	$162.50	12000	$1,950,000	13000	$2,112,500	12500	$2,031,250
21.15	METAL CHIMNEY/VENT SYSTEM	Item	1	$255.13	12000	$3,061,560	13000	$3,316,690	12500	$3,189,125
	ELECTRICAL									
22.1	EXTERIOR service items									
	25.4mm Weatherhead	100	0.01	$495.80	120	$59,496	130	$64,454	125	$61,975
	Claves	100	0.01	$580.00	120	$69,600	130	$75,400	125	$72,500
	Meter base	100	0.01	$43.00	120	$5,160	130	$5,590	125	$5,375
22.2	CONDUIT 1.25 Emt	100m	0.02	$80.20	240	$19,248	260	$20,852	250	$20,050

Table 2.8 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Detached House Construction For 1989 -1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
22.3	**MAIN SWITCH & Breaker Box**									
	25.4mm Emt connectors	100	0.04	$85.28	480	$40,934	520	$44,346	500	$42,640
	100 amp 32 circuit panel	Item	1	$67.24	12000	$806,880	13000	$874,120	12500	$840,500
	#6 Bare copper wire	100m	0.06	$160.70	720	$115,704	780	$125,346	750	$120,525
	Screws #8x25mm	100	0.4	$3.83	4800	$18,384	5200	$19,916	5000	$19,150
22.4	**ELEC. CIRCUIT BREAKERS**									
	15 amp Single pole breakers	Item	5	$4.88	60000	$292,800	65000	$317,200	62500	$305,000
	15 amp Double pole breakers	Item	2	$10.77	24000	$258,480	26000	$280,020	25000	$269,250
	15 amp Ground fault breakers	Item	2	$53.50	24000	$1,284,000	26000	$1,391,000	25000	$1,337,500
	40 amp Double pole breakers	Item	1	$42.50	12000	$510,000	13000	$552,500	12500	$531,250
	30 amp Double pole breakers	Item	1	$42.50	12000	$510,000	13000	$552,500	12500	$531,250
22.5	**INSULATED WIRE**									
	#3x-Link, copper wire	m	17.4	$5.77	208800	$1,204,776	226200	$1,305,174	217500	$1,254,975
	9.5 flex	m	6	$12.00	72000	$864,000	78000	$936,000	75000	$900,000
	12.7mm cable straps	100	0.24	$22.05	2880	$63,504	3120	$68,796	3000	$66,150
	25.4 m Cable Straps	100	0.04	$45.15	480	$21,672	520	$23,478	500	$22,575
	Cable Straps	100	1.4	$2.50	16800	$42,000	18200	$45,500	17500	$43,750
	20/20 Connectors	100	0.2	$16.00	2400	$38,400	2600	$41,600	2500	$40,000
	Range Cable Connector	100	0.04	$105.10	480	$50,448	520	$54,652	500	$52,550
	Ground Clamp	100	0.01	$170.57	120	$20,468	130	$22,174	125	$21,321
	9.5mm Flex Connectors	100	0.03	$37.95	360	$13,662	390	$14,801	375	$14,231
	Marr Connectors	Item	60	$0.25	720000	$180,000	780000	$195,000	750000	$187,500
	2-14 Insulated Copper Wire	m	336	$1.19	4032000	$4,798,080	4368000	$5,197,920	4200000	$4,998,000
	3-14 Insulated Copper Wire	m	61	$1.99	732000	$1,456,680	793000	$1,578,070	762500	$1,517,375
	3-8 Insulated Copper Wire	m	76	$7.02	912000	$6,402,240	988000	$6,935,760	950000	$6,669,000
	3-10 Insulated Copper Wire	m	46	$4.11	552000	$2,268,720	598000	$2,457,780	575000	$2,363,250
22.6	**JUNCTION & OUTLET BOXES**									
	1104 Switch Boxes	100	0.39	$161.80	4680	$757,224	5070	$820,326	4875	$788,775
	100mm Octogon Boxes	100	0.17	$205.85	2040	$419,934	2210	$454,929	2125	$437,431
	100mm Deep Square Boxes	100	0.03	$377.85	360	$136,026	390	$147,362	375	$141,694
	Shallow Plaster Boxes	100	0.02	$204.60	240	$49,104	260	$53,196	250	$51,150
	Duplex Plugs 110V	100	0.23	$92.75	2760	$255,990	2990	$277,323	2875	$266,656
	Duplex Plug Cover Plates	100	0.21	$29.75	2520	$74,970	2730	$81,218	2625	$78,094
	Water Proof Plub Covers	100	0.02	$201.25	240	$48,300	260	$52,325	250	$50,313
	30A/220V Plug	100	0.01	$472.50	120	$56,700	130	$61,425	125	$59,063
	40A/220V Plug	100	0.01	$472.50	120	$56,700	130	$61,425	125	$59,063

Table 2.8 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Detached House Construction For 1989 -1991

CAT#	SINGLE DETACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
22.8	Light Fixtures									
	Bedroom	Item	4	$15.00	48000	$720,000	52000	$780,000	50000	$750,000
	Kitchen	Item	1	$100.00	12000	$1,200,000	13000	$1,300,000	12500	$1,250,000
	Bathroom	Item	3	$50.00	36000	$1,800,000	39000	$1,950,000	37500	$1,875,000
	Exterior	Item	2	$35.00	24000	$840,000	26000	$910,000	25000	$875,000
	Utility	Item	4	$10.00	48000	$480,000	52000	$520,000	50000	$500,000
	Family room	Item	2	$15.00	24000	$360,000	26000	$390,000	25000	$375,000

Table 2.9
Projected Quantities of Residential Building Products
Used in Single Attached House Construction for 1989-1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
1	FOUNDATION									
1.1	CONCRETE FOUNDATION									
	20 Mpa Concrete - footings & fdn walls	m3	19	$85.00	15200	$1,292,000	22800	$1,938,000	22800	$1,938,000
	150mm compacted sand	m3	25	$6.60	20000	$132,000	30000	$198,000	30000	$198,000
	6 mil vapour barrier	m2	164	$0.32	131200	$41,984	196800	$62,976	196800	$62,976
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	72000	$458,640	108000	$687,960	108000	$687,960
	100mm conc, sidewalk & driveway	m2	10	$9.25	8000	$74,000	12000	$111,000	12000	$111,000
	Form plywood 19mm spruce	m2	14	$20.00	11200	$224,000	16800	$336,000	16800	$336,000
	38x89 spruce whalers etc.	item	225	$0.29	180000	$52,200	270000	$78,300	270000	$78,300
	Form ties	item	750	$0.15	600000	$90,000	900000	$135,000	900000	$135,000
	Nails .89 coated	kg	2.5	$1.34	2000	$2,680	3000	$4,020	3000	$4,020
	Reinforcing steel bars 15mm	m	175	$0.98	140000	$137,200	210000	$205,800	210000	$205,800
	Welded mesh reinforcing	m2	90	$0.96	72000	$69,120	108000	$103,680	108000	$103,680
	Anchor bolts	item	50	$0.38	40000	$15,200	60000	$22,800	60000	$22,800
	4 mil Polyethylene protective sheet	m2	120	$0.23	96000	$22,080	144000	$33,120	144000	$33,120
	FIREPLACE									
	c/w dual metal const extensions & elbows, cap, hearth, & lam. cedar mantel	item	1	$1,148.50	800	$918,800	1200	$1,378,200	1200	$1,378,200
	100mm clay brick veneer	m2	9	$43.50	7200	$313,200	10800	$469,800	10800	$469,800
2	DAMPPROOFING									
2.1	Asphalt emulsion	litre	18	$1.35	14400	$19,440	21600	$29,160	21600	$29,160
2.2	100mm Weeping tile	m	25	$3.86	20000	$77,200	30000	$115,800	30000	$115,800
	150mm crushed gravel	m3	14	$7.13	11200	$79,856	16800	$119,784	16800	$119,784
4	ENTRY STEPS									
	Precast conc steps 2 risers	item	1	$217.00	800	$173,600	1200	$260,400	1200	$260,400
	Precast concrete brackets	item	1	$87.00	800	$69,600	1200	$104,400	1200	$104,400
5	ROUGH CARPENTRY									
5.1	DIMENSION LUMBER									
	38X89 spruce	1000 bf	2.56	$294.00	2049	$602,347	3073	$903,521	3073	$903,521
	38X140 spruce	1000 bf	2.79	$309.00	2230	$689,194	3346	$1,033,790	3346	$1,033,790
	38X235 spruce	1000 bf	2.11	$549.00	1684	$924,516	2526	$1,386,774	2526	$1,386,774
	38X38 spruce	1000 bf	0.12	$369.00	96	$35,424	144	$53,136	144	$53,136
	19X140 spruce	1000 bf	0.04	$650.00	29	$18,720	43	$28,080	43	$28,080

Table 2.9 (Continued)
Projected Quantities of Residential Building Products
Used in Single Attached House Construction for 1989-1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
5.2	**SHEATHING MATERIAL**									
	15.9mm T&G fir (floor)	m2	110	$6.45	88000	$567,600	132000	$851,400	132000	$851,400
	12.7mm spruce plywood (roof)	m2	90	$4.36	72000	$313,920	108000	$470,880	108000	$470,880
	8mm wafer board (walls)	m2	150	$2.68	120000	$321,600	180000	$482,400	180000	$482,400
5.3	**ADJ. STEEL POSTS**	item	2	$32.99	1600	$52,784	2400	$79,176	2400	$79,176
5.5	**PREMFD WOOD TRUSSES**	item	30	$45.00	24000	$1,080,000	36000	$1,620,000	36000	$1,620,000
5.2.7	**NAILS**									
	51mm phosphate coated	kg	20	$2.21	16000	$35,360	24000	$53,040	24000	$53,040
	63.5mm phosphate coated	kg	10	$1.41	8000	$11,280	12000	$16,920	12000	$16,920
	89mm phosphate coated	kg	51	$1.34	40800	$54,672	61200	$82,008	61200	$82,008
	51mm hot dipped galv	kg	1	$2.05	800	$1,640	1200	$2,460	1200	$2,460
	25mm annular	kg	1	$1.73	800	$1,384	1200	$2,076	1200	$2,076
5.7	**CEDAR DECK**									
	89x89 presure treated posts	m	1.2	$1.93	960	$1,853	1440	$2,779	1440	$2,779
	38x184 presure treated joists	m	31.1	$2.36	24880	$58,717	37320	$88,075	37320	$88,075
	38x89 cedar decking	m	91	$1.37	72800	$99,736	109200	$149,604	109200	$149,604
	Cedar guard & handrail									
	-38x140 top rail	m	14.4	$2.65	11520	$30,528	17280	$45,792	17280	$45,792
	-38x89 bottom rail	m	14.4	$1.37						
	-38x38 vertical rails	m	140	$1.05	112000	$117,600	168000	$176,400	168000	$176,400
5.8	**CONSTRUCTION ADHESIVE**	litre	20	$7.25	16000	$116,000	24000	$174,000	24000	$174,000
5.9	**SHEATHING SCREWS**	item	2600	$0.03	2080000	$62,400	3120000	$93,600	3120000	$93,600
5.11	**WOOD STAIR**	risers	23	$17.30	18400	$318,320	27600	$477,480	27600	$477,480
6	**ROOFING**									
6.1	**ASHALT SHINGLES (80%)**									
	Asphalt shingles @ 32SF/bundle	bundles	52	$9.79	33280	$325,811	49920	$488,717	49920	$488,717
	Black bldg felt #15	m2	156	$0.27	99840	$26,957	149760	$40,435	149760	$40,435
	Roofing nails	kg	16	$2.30	10240	$23,552	15360	$35,328	15360	$35,328
	Tab down cement	litre	10	$1.35	6400	$8,640	9600	$12,960	9600	$12,960
6	**ALTERNATE ROOFING - CEDAR SHINGLES (20%)**									
	bundles for 160 m2 (1976.6 SF) @ 20SF	bundle	85	$21.00	10710	$224,910	16065	$337,365	16065	$337,365
	Black building paper #15	m2	156	$0.27	19656	$5,307	29484	$7,961	29484	$7,961
	Roofing nails	kg	17	$2.30	2142	$4,927	3213	$7,390	3213	$7,390

Table 2.9 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Attached House Construction For 1989 -1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
6.4	**FLASHING**									
	Alum prefin flashing	m	60	$2.27	48000	$108,960	72000	$163,440	72000	$163,440
6.5	**EAVESTROUGHS & DOWNSPOUTS**									
	Alum eavestroughs	m	36	$2.42	28800	$69,696	43200	$104,544	43200	$104,544
	Alum prefin end caps	units	2	$0.35	1600	$560	2400	$840	2400	$840
	Alum prefin out drops	units	7	$0.70	5600	$3,920	8400	$5,880	8400	$5,880
	Alum prefin elbows	units	7	$1.25	5600	$7,000	8400	$10,500	8400	$10,500
	Alum prefin downspouts	m	25	$2.42	20000	$48,400	30000	$72,600	30000	$72,600
	Alum ferrules	units	36	$0.20	28800	$5,760	43200	$8,640	43200	$8,640
7	**WINDOWS**									
	Window - wood frame, alum sash, D/G horiz slider 1300x900mm	unit	1	$245.00	800	$196,000	1200	$294,000	1200	$294,000
	Window - wood frame, alum sash, D/G horiz slider 1500x900mm	unit	2	$268.00	1600	$428,800	2400	$643,200	2400	$643,200
	Window - wood frame, alum sash, D/G slider 1200x900mm	unit	4	$235.00	3200	$752,000	4800	$1,128,000	4800	$1,128,000
	Window - wood frame, alum clad, D/G slider 2400x1700mm fixed	unit	1	$580.00	800	$464,000	1200	$696,000	1200	$696,000
8	**INSULATION & VAPOUR BARRIER**									
8.1	6 mil Polyethylene sheeting	m2	325	$0.23	260000	$59,800	390000	$89,700	390000	$89,700
	Fibrous batt insulation:									
	RSI-2.1	batts	300	$1.91	240000	$458,400	360000	$687,600	360000	$687,600
	RSI-3.5	batts	300	$1.98	240000	$475,200	360000	$712,800	360000	$712,800
8.6	Treated cellulose RSI-6 (attic)	m3	30	$17.63	24000	$423,120	36000	$634,680	36000	$634,680
9	**EXTERIOR FINISHES**									
9.1	**PARGING - Exterior Basement**									
	Parging wall above grade	m3	0.75	$80.00	600	$48,000	900	$72,000	900	$72,000
	Galvanized wire mesh 50x50	m2	15	$0.96	12000	$11,520	18000	$17,280	18000	$17,280
	Nails 30mm galv roofing	kg	3.75	$1.73	3000	$5,190	4500	$7,785	4500	$7,785
9.5	**BRICKWORK - Front facade only**									
	100 Brick veneer facing	m2	44	$43.50	17600	$765,600	26400	$1,148,400	26400	$1,148,400
	Mortar c/w colorant	m3	1	$128.00	400	$51,200	600	$76,800	600	$76,800
	Galvanized ties	item	2842	$0.04	1136800	$39,788	1705200	$59,682	1705200	$59,682
	Steel Lintels	m	15	$9.00	6000	$54,000	9000	$81,000	9000	$81,000
	Weep Vents	item	21	$0.32	8400	$2,688	12600	$4,032	12600	$4,032
	Black building paper #15	m2	44	$0.27	17600	$4,752	26400	$7,128	26400	$7,128

Table 2.9 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Attached House Construction For 1989 -1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	VINYL SIDING (56%)									
	Alum prefinished fascia	m	46.5	$1.82	18608	$33,867	27912	$50,800	27912	$50,800
	Nails	kg	1.98	$9.00	792	$7,128	1188	$10,692	1188	$10,692
	Vented alum panels 406mm exposed face	m	29	$3.35	11600	$38,860	17400	$58,290	17400	$58,290
	100mm vinyl siding	m2	89.7	$9.42	35880	$337,990	53820	$506,984	53820	$506,984
	Black building paper #15	m2	89.7	$0.27	35880	$9,688	53820	$14,531	53820	$14,531
9.3	**ALTERNATIVE - ALUMINUM SIDING (10% of exterior)**									
	Siding	m2	89.8	$38.35	3590	$137,692	5386	$206,538	5386	$206,538
	Alum starter strip	m	26.4	$0.74	1056	$781	1584	$1,172	1584	$1,172
	Alum outside corner post	m	5.94	$2.40	238	$570	356	$855	356	$855
	Alum J mold	m	31.7	$0.74	1267	$938	1901	$1,407	1901	$1,407
	Alum prefinished fascia	m	47.5	$1.82	1901	$3,459	2851	$5,189	2851	$5,189
	Black building paper #15	m2	119	$0.27	4752	$1,283	7128	$1,925	7128	$1,925
	Nails	kg	1.98	$9.00	79	$713	119	$1,069	119	$1,069
9.1	**ALTERNATIVE - STUCCO (20% of exterior)**									
	Premixed stucco & scratchcoat	m3	1.98	$250.00	317	$79,200	475	$118,800	475	$118,800
	Galvanized wire mesh 50x50	m2	119	$0.96	19008	$18,248	28512	$27,372	28512	$27,372
	Nails, 30mm galv roofing	kg	33	$1.73	5280	$9,134	7920	$13,702	7920	$13,702
	Black building paper #15	m2	119	$0.27	19008	$5,132	28512	$7,698	28512	$7,698
9.2	**ALTERNATIVE - BEVELED CLEAR CEDAR SIDING (10% of exterior)**									
	190mm exposed face - in board feet	bf	1267	$1.71	101376	$173,353	152064	$260,029	152064	$260,029
	Cedar trim boards 19x89 - in board feet	bf	26.4	$0.80	2112	$1,267	3168	$1,901	3168	$1,901
	Nails 51 galvanized	kg	4.62	$2.21	370	$817	554	$1,225	554	$1,225
	Black building paper #15	m2	119	$0.27	9504	$2,566	14256	$3,849	14256	$3,849
9.5	**ALTERNATIVE - BRICK (5% of exterior)**									
	100mm Brick Veneer	m2	119	$43.50	4752	$206,712	7128	$310,068	7128	$310,068
	Mortar c/w colorant	m3	1.98	$128.00	79	$10,138	119	$15,206	119	$15,206
	Galvanized ties	item	8721	$0.04	348840	$13,954	523260	$20,930	523260	$20,930
	Steel lintels	m	10.9	$9.00	436	$3,920	653	$5,881	653	$5,881
	Weep vents	item	54.8	$0.32	2191	$701	3287	$1,052	3287	$1,052
	Black building paper #15	m2	119	$0.27	4752	$1,283	7128	$1,925	7128	$1,925
9.9	Acrylic sealant caulking (300ml)	tubes	30	$3.90	24000	$93,600	36000	$140,400	36000	$140,400
10	**EXTERIOR DOORS & FRAMES**									
10.1	Insulated metal door & wood frame	item	1	$295.00	800	$236,000	1200	$354,000	1200	$354,000
10.1	Aluminum storm door	item	1	$250.00	800	$200,000	1200	$300,000	1200	$300,000
10.11	Patio door 2100x1800	item	1	$685.00	800	$548,000	1200	$822,000	1200	$822,000
10.6	Weatherstripping Threshold	m	1	$5.20	800	$4,160	1200	$6,240	1200	$6,240

Table 2.9 (Continued)
Projected Quantities of Residential Building Products
Used in Single Attached House Construction for 1989-1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
10.6	Weatherstrip door perimeter	m	6	$5.40	4800	$25,920	7200	$38,880	7200	$38,880
11	INTERIOR WALL/CEILING FINISHES									
11.1	Drywall									
	Gypsum board 12.7mm	m2	580	$1.95	464000	$904,800	696000	$1,357,200	696000	$1,357,200
	Drywall tape	m	1400	$0.03	1120000	$28,000	1680000	$42,000	1680000	$42,000
	Corner bead	m	60	$0.40	48000	$19,200	72000	$28,800	72000	$28,800
	Joint filler	kg	150	$0.60	120000	$72,000	180000	$108,000	180000	$108,000
	Ceiling texture spray	kg	50	$0.70	40000	$28,000	60000	$42,000	60000	$42,000
	Drywall screws	items	4680	$0.03	3744000	$112,320	5616000	$168,480	5616000	$168,480
11.6	TILE									
	Ceramic tile	m2	9	$22.60	7200	$162,720	10800	$244,080	10800	$244,080
	Tile adhesive	litre	8	$5.20	6400	$33,280	9600	$49,920	9600	$49,920
	Grout	kg	3	$3.08	2400	$7,392	3600	$11,088	3600	$11,088
	Silicone sealant	tube	1	$5.00	800	$4,000	1200	$6,000	1200	$6,000
	6.3mm particle board for ceramic tile flr	m2	22	$5.27	17600	$92,752	26400	$139,128	26400	$139,128
12	FLOORING									
12.1	CARPET									
	Carpet, 32 oz. 100% nylon	m2	112	$17.93	89600	$1,606,528	134400	$2,409,792	134400	$2,409,792
	Foam underpad 6mm	m2	112	$3.58	89600	$320,768	134400	$481,152	134400	$481,152
	Carpet grippers	m	160	$0.33	128000	$42,240	192000	$63,360	192000	$63,360
12.3	RESILIENT FLOORING									
	Sheet vinyl flooring - Kit/Bath/Din Rm	m2	47	$11.95	37600	$449,320	56400	$673,980	56400	$673,980
	Flooring adhesive	litre	5	$4.17	4000	$16,680	6000	$25,020	6000	$25,020
13	PAINTING - Exterior 2 coats									
	Enamel windows, doors, trim	litre	2	$10.00	1600	$16,000	2400	$24,000	2400	$24,000
	Stain finish cedar decking	litre	2	$7.00	1600	$11,200	2400	$16,800	2400	$16,800
	Stain finish rail	litre	5	$7.00	4000	$28,000	6000	$42,000	6000	$42,000
	PAINTING - Interior 2 coats									
	Enamel windows, doors, trim	litre	8	$10.00	6400	$64,000	9600	$96,000	9600	$96,000
	Semigloss or flat latex to drywall	litre	64	$9.00	51200	$460,800	76800	$691,200	76800	$691,200
	Stain finish doors & frames	litre	10	$9.00	8000	$72,000	12000	$108,000	12000	$108,000
	Stain finish bifold doors & frames	litre	2	$7.00	1600	$11,200	2400	$16,800	2400	$16,800
	Semigloss baseboards & shelves	litre	10	$10.00	8000	$80,000	12000	$120,000	12000	$120,000
	Stain finish handrails	litre	1	$7.00	800	$5,600	1200	$8,400	1200	$8,400
	Stain finish balustrade	litre	1	$7.00	800	$5,600	1200	$8,400	1200	$8,400
14	MILLWORK									
14.1	Int hollow core wood doors, wood frames									

Table 2.9 (Continued)
Projected Quantities of Residential Building Products
Used in Single Attached House Construction for 1989-1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	2032x711mm	item	3	$68.00	2400	$163,200	3600	$244,800	3600	$244,800
	2032x762mm	item	6	$68.00	4800	$326,400	7200	$489,600	7200	$489,600
14.3	CLOSET DOORS - wood bifolds c/w hardware									
	2032x610mm	item	8	$36.00	6400	$230,400	9600	$345,600	9600	$345,600
	2032x750mm	item	2	$38.40	1600	$61,440	2400	$92,160	2400	$92,160
	2032x914mm	item	2	$40.50	1600	$64,800	2400	$97,200	2400	$97,200
14.6	WINDOW/DOOR TRIM									
	Untin wood casing 12.7x50mm	m	126	$0.74	100800	$74,592	151200	$111,888	151200	$111,888
14.7	BASEBOARD									
	Untin wood baseboard 12.7x70mm	m	227	$0.82	181600	$148,912	272400	$223,368	272400	$223,368
14.8	BATHROOM VANITIES									
	Wood cabinet & countertop	m	2.7	$278.85	2160	$602,316	3240	$903,474	3240	$903,474
14.9	KITCHEN CUPBOARDS									
	Lower cupboards	m	4	$297.00	3200	$950,400	4800	$1,425,600	4800	$1,425,600
	Upper cupboards	m	4	$150.00	3200	$480,000	4800	$720,000	4800	$720,000
	Range hood	item	1	$84.00	800	$67,200	1200	$100,800	1200	$100,800
14.1	CUPBOARD & CLOSET SHELVES									
	Plywood c/w hardwood nosing	m	13.9	$11.20	11120	$124,544	16680	$186,816	16680	$186,816
14.11	CLOTHES ROD - Closets									
	Chrome plated rod 25mm diam	m	21	$5.10	16800	$85,680	25200	$128,520	25200	$128,520
15	HARDWARE									
15.1	Entry lockset, house	item	2	$29.99	1600	$47,984	2400	$71,976	2400	$71,976
15.3	Privacy lockset, house	item	7	$23.29	5600	$130,424	8400	$195,636	8400	$195,636
15.4	Passage latchset, house	item	3	$15.56	2400	$37,344	3600	$56,016	3600	$56,016
15.7	Door stop	item	8	$1.09	6400	$6,976	9600	$10,464	9600	$10,464
	Security deadbolt	item	1	$16.50	800	$13,200	1200	$19,800	1200	$19,800
	Mailbox	item	1	$14.00	800	$11,200	1200	$16,800	1200	$16,800
	House numbers	item	5	$7.00	4000	$28,000	6000	$42,000	6000	$42,000
16	BATHROOM ACCESSORIES									
16.1	Toilet paper holder, chrome	item	3	$6.80	2400	$16,320	3600	$24,480	3600	$24,480
16.2	Towel bar chrome 610mm	item	3	$8.80	2400	$21,120	3600	$31,680	3600	$31,680
16.3	Mirror c/w clips 6x12x900mm	item	3	$20.00	2400	$48,000	3600	$72,000	3600	$72,000
16.7	Soap dish & grab, metal	item	2	$9.60	1600	$15,360	2400	$23,040	2400	$23,040
16.8	Medicine cabinet	item	3	$65.00	2400	$156,000	3600	$234,000	3600	$234,000

Table 2.9 (Continued)
Projected Quantities of Residential Building Products
Used in Single Attached House Construction for 1989-1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
16.9	Robe hook, chrome	item	3	$2.60	2400	$6,240	3600	$9,360	3600	$9,360
	25mm diam. metal shower curtain rod	item	2	$12.80	1600	$20,480	2400	$30,720	2400	$30,720
20	PLUMBING									
20.1	WATER CLOSETS									
	Water closet, Crane Radcliffe	item	3	$145.98	2400	$350,352	3600	$525,528	3600	$525,528
	Beneke 2000 closet seat, white	item	3	$7.27	2400	$17,448	3600	$26,172	3600	$26,172
	Setting seal radiateor G-230	item	3	$0.93	2400	$2,232	3600	$3,348	3600	$3,348
	Flexible supplies,30cm	item	3	$1.09	2400	$2,616	3600	$3,924	3600	$3,924
	Escutcheons copper,15mm	item	3	$0.15	2400	$360	3600	$540	3600	$540
	R19 stops,15mm	item	3	$2.44	2400	$5,856	3600	$8,784	3600	$8,784
20.2	ENAMELLED STEEL BATHROOM SINKS									
	Crane Coronette, white 1.306	item	3	$57.01	2400	$136,824	3600	$205,236	3600	$205,236
	Emco 4" centre set, 2-107	item	3	$31.64	2400	$75,936	3600	$113,904	3600	$113,904
	Emco pop-up drain, 2123	item	3	$17.81	2400	$42,744	3600	$64,116	3600	$64,116
	Flexible supplies c/w stops,30cm	set	3	$8.35	2400	$20,040	3600	$30,060	3600	$30,060
	Chrome P traps,25cm	item	3	$15.02	2400	$36,048	3600	$54,072	3600	$54,072
20.3	BATHTUB									
	Fibreglass tub/shower unit	item	2	$540.00	1600	$864,000	2400	$1,296,000	2400	$1,296,000
	Tub filler roughing-in, Emco 2271	item	2	$38.13	1600	$61,008	2400	$91,512	2400	$91,512
	Tub filler trim, Emco 2270	item	2	$34.54	1600	$55,264	2400	$82,896	2400	$82,896
	Bath drain Emco, 2900,40mm	item	2	$27.45	1600	$43,920	2400	$65,880	2400	$65,880
20.4	KITCHEN SINK									
	Dbl compartment stainless steel sinks, Steel Queen QDL 203	item	1	$167.23	800	$133,784	1200	$200,676	1200	$200,676
	Continuous wastes	item	1	$18.75	800	$15,000	1200	$22,500	1200	$22,500
	Belanger endout contin. waste	item	1	$18.75	800	$15,000	1200	$22,500	1200	$22,500
	Emco 2160 deck faucets	item	1	$38.63	800	$30,904	1200	$46,356	1200	$46,356
	1-1/2 brass P traps	item	1	$14.49	800	$11,592	1200	$17,388	1200	$17,388
20.7	H/W HEATER, John Wood JW402	item	1	$307.26	800	$245,808	1200	$368,712	1200	$368,712
20.8	PIPE,FITTINGS AND ACCESSORIES									
	Y's or Ty's ABS,100mm	item	5	$9.48	4000	$37,920	6000	$56,880	6000	$56,880
	Y's or Ty's ABS,75mm	item	8	$3.99	6400	$25,536	9600	$38,304	9600	$38,304
	Y's or Ty's ABS,50mm	item	4	$2.10	3200	$6,720	4800	$10,080	4800	$10,080
	Y's or Ty's ABS,40mm	item	3	$1.13	2400	$2,712	3600	$4,068	3600	$4,068
	Ells, 90 or 45 deg,100mm	item	7	$6.66	5600	$37,296	8400	$55,944	8400	$55,944
	Ells, 90 or 45 deg,75mm	item	11	$3.32	8800	$29,216	13200	$43,824	13200	$43,824

Table 2.9 (Continued)
Projected Quantities of Residential Building Products
Used in Single Attached House Construction for 1989-1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	Ells, 90 or 45 deg,50mm	item	12	$1.41	9600	$13,536	14400	$20,304	14400	$20,304
	Ells, 90 or 45 deg,40mm	item	17	$0.88	13600	$11,968	20400	$17,952	20400	$17,952
	Couplings - ABS,100mm	item	3	$2.66	2400	$6,384	3600	$9,576	3600	$9,576
	Couplings - ABS,75mm	item	4	$1.43	3200	$4,576	4800	$6,864	4800	$6,864
	Couplings - ABS,100mm	item	3	$0.63	2400	$1,512	3600	$2,268	3600	$2,268
	Couplings - ABS,40mm	item	10	$0.41	8000	$3,280	12000	$4,920	12000	$4,920
	Pipe ABS,100mm	metre	7.6	$3.97	6080	$24,138	9120	$36,206	9120	$36,206
	Pipe ABS,75mm	metre	18.6	$2.58	14880	$38,390	22320	$57,586	22320	$57,586
	Pipe ABS,50mm	metre	10	$1.36	8000	$10,880	12000	$16,320	12000	$16,320
	Pipe ABS,40mm	metre	31	$0.95	24800	$23,560	37200	$35,340	37200	$35,340
	Clean Outs ABS Line,100mm	item	2	$13.59	1600	$21,744	2400	$32,616	2400	$32,616
	Clean Outs ABS Line,50mm	item	3	$4.44	2400	$10,656	3600	$15,984	3600	$15,984
	Clean Outs ABS Line,40mm	item	2	$2.70	1600	$4,320	2400	$6,480	2400	$6,480
	Traps, ABS,100x75mm	item	1	$25.04	800	$20,032	1200	$30,048	1200	$30,048
	Trap Adapter,40mm	item	2	$1.14	1600	$1,824	2400	$2,736	2400	$2,736
	Trap deep seal,75mm	item	1	$12.28	800	$9,824	1200	$14,736	1200	$14,736
	Line C.O,m ABS,50mm	item	1	$4.44	800	$3,552	1200	$5,328	1200	$5,328
	Weeping tile c/w back water valve and c.o.,75mm	item	1	$67.91	800	$54,328	1200	$81,492	1200	$81,492
	Traps, ABS,40mm	item	4	$2.37	3200	$7,584	4800	$11,376	4800	$11,376
	Increaser, ABS,100x75mm	item	2	$3.59	1600	$5,744	2400	$8,616	2400	$8,616
	Bushings, ABS,75mm	item	2	$2.20	1600	$3,520	2400	$5,280	2400	$5,280
	Expension Joint ABS,75mm	item	1	$16.90	800	$13,520	1200	$20,280	1200	$20,280
	Floor Flange,100x75mm	item	4	$5.87	3200	$18,784	4800	$28,176	4800	$28,176
	Flashing aluminum high cone,100mm	item	1	$12.73	800	$10,184	1200	$15,276	1200	$15,276
	Test caps PVC,50mm	item	1	$0.76	800	$608	1200	$912	1200	$912
	Floor drain grate, ABS,100mm	item	1	$6.28	800	$5,024	1200	$7,536	1200	$7,536
	ABS cement	litre	1.9	$7.73	1520	$11,750	2280	$17,624	2280	$17,624
	ABS cleaner	litre	1	$5.74	800	$4,592	1200	$6,888	1200	$6,888
	Suspension strap,20mm	metre	3	$3.29	2400	$7,896	3600	$11,844	3600	$11,844
	Stenco access cover,50x150mm	item	2	$9.62	1600	$15,392	2400	$23,088	2400	$23,088
	Test cap,100mm	item	1	$1.40	800	$1,120	1200	$1,680	1200	$1,680
	Test cap,75mm	item	1	$1.03	800	$824	1200	$1,236	1200	$1,236
	Test cap,50mm	item	1	$0.76	800	$608	1200	$912	1200	$912
	Copper pipe type M,15mm	m	12	$2.29	9600	$21,984	14400	$32,976	14400	$32,976
	Couplings C x C,15mm	item	4	$0.43	3200	$1,376	4800	$2,064	4800	$2,064
	90 deg Ells, C x C,15mm	item	10	$0.44	8000	$3,520	12000	$5,280	12000	$5,280
	Tees C x C,20mm	item	2	$1.95	1600	$3,120	2400	$4,680	2400	$4,680
	Tees C x C,15mm	item	5	$0.81	4000	$3,240	6000	$4,860	6000	$4,860
	Stops C x C,15mm	item	2	$4.17	1600	$6,672	2400	$10,008	2400	$10,008
	Drop eared ell,15mm	item	1	$2.18	800	$1,744	1200	$2,616	1200	$2,616
	Adapter, C x F,15mm	item	1	$1.17	800	$936	1200	$1,404	1200	$1,404
	Adapter, C x M,15mm	item	2	$1.31	1600	$2,096	2400	$3,144	2400	$3,144

Table 2.9 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Attached House Construction For 1989 -1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
	Solder,100g	item	1	$0.69	800	$552	1200	$828	1200	$828
	Galv. Ells,75mm	item	3	$1.56	2400	$3,744	3600	$5,616	3600	$5,616
	Galv. pipe, 20 ga.,75mm	m	2	$3.48	1600	$5,568	2400	$8,352	2400	$8,352
21	HVAC									
21.1	HEATING & VENTILATION Valve Assembly	item	1	$130.00	800	$104,000	1200	$156,000	1200	$156,000
21.2	FORCED AIR FURNACE Conventional Gas Fired Hot Air Furnace	item	1	$767.00	800	$613,600	1200	$920,400	1200	$920,400
21.3	DUCTING Galvanized Sheet Metal Duct	m	37.5	$23.40	30000	$702,000	45000	$1,053,000	45000	$1,053,000
21.4	THERMOSTAT	item	1	$19.50	800	$15,600	1200	$23,400	1200	$23,400
21.5	HUMIDIFIER	item	1	$113.75	800	$91,000	1200	$136,500	1200	$136,500
21.9	FLEXIBLE DUCTING	item	3	$11.38	2400	$27,312	3600	$40,968	3600	$40,968
21.1	DUCT INSULATION	m	9.5	$21.55	7600	$163,780	11400	$245,670	11400	$245,670
21.13	FANS Bathroom Fan and Duct	item	2	$78.00	1600	$124,800	2400	$187,200	2400	$187,200
	Range Hood Fan and Duct	item	1	$162.50	800	$130,000	1200	$195,000	1200	$195,000
21.15	METAL CHIMNEY/VENT SYSTEM	item	1	$255.13	800	$204,104	1200	$306,156	1200	$306,156
	ELECTRICAL									
22.1	EXTERIOR service items 25.4mm Weatherhead	100	0.01	$495.80	8	$3,966	12	$5,950	12	$5,950
	Cleves	100	0.01	$580.00	8	$4,640	12	$6,960	12	$6,960
	Meter base	100	0.01	$43.00	8	$344	12	$516	12	$516
22.2	CONDUIT 1.25 Emt	100m	0.02	$80.20	16	$1,283	24	$1,925	24	$1,925
22.3	MAIN SWITCH & Breaker Box 25.4mm Emt connectors	100	0.04	$85.28	32	$2,729	48	$4,093	48	$4,093
	100 amp 32 circuit panel	item	1	$67.24	800	$53,792	1200	$80,688	1200	$80,688
	#6 Bare copper wire	100m	0.06	$160.70	48	$7,714	72	$11,570	72	$11,570
	Screws #8x25mm	100	0.4	$3.83	320	$1,226	480	$1,838	480	$1,838

Table 2.9 (Continued)
Projected Quantities Of Residential Building Products
Used In Single Attached House Construction For 1989 -1991

CAT#	SINGLE ATTACHED HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
22.4	ELEC. CIRCUIT BREAKERS									
	15 amp Single pole breakers	item	5	$4.86	4000	$19,520	6000	$29,280	6000	$29,280
	15 amp Double pole breakers	item	2	$10.77	1600	$17,232	2400	$25,848	2400	$25,848
	15 amp Ground fault breakers	item	2	$53.50	1600	$85,600	2400	$128,400	2400	$128,400
	40 amp Double pole breakers	item	1	$42.50	800	$34,000	1200	$51,000	1200	$51,000
	30 amp Double pole breakers	item	1	$42.50	800	$34,000	1200	$51,000	1200	$51,000
22.5	INSULATED WIRE									
	#3x-Link, copper wire	m	17.4	$5.77	13920	$80,318	20880	$120,478	20880	$120,478
	9.5 flex	m	6	$12.00	4800	$57,600	7200	$86,400	7200	$86,400
	12.7mm cable straps	100	0.24	$22.05	192	$4,234	288	$6,350	288	$6,350
	25.4 m Cable Straps	100	0.04	$45.15	32	$1,445	48	$2,167	48	$2,167
	Cable Straps	100	1.4	$2.50	1120	$2,800	1680	$4,200	1680	$4,200
	20/20 Connectors	100	0.2	$16.00	160	$2,560	240	$3,840	240	$3,840
	Range Cable Connector	100	0.04	$105.10	32	$3,363	48	$5,045	48	$5,045
	Ground Clamp	100	0.01	$170.57	8	$1,365	12	$2,047	12	$2,047
	9.5mm Flex Connectors	100	0.03	$37.95	24	$911	36	$1,366	36	$1,366
	Marr Connectors	item	60	$0.25	48000	$12,000	72000	$18,000	72000	$18,000
	2-14 Insulated Copper Wire	m	336	$1.19	268800	$319,872	403200	$479,808	403200	$479,808
	3-14 Insulated Copper Wire	m	61	$1.99	48800	$97,112	73200	$145,668	73200	$145,668
	3-8 Insulated Copper Wire	m	76	$7.02	60800	$426,816	91200	$640,224	91200	$640,224
	3-10 Insulated Copper Wire	m	46	$4.11	36800	$151,248	55200	$226,872	55200	$226,872
22.6	JUNCTION & OUTLET BOXES									
	1104 Switch Boxes	100	0.39	$161.80	312	$50,482	468	$75,722	468	$75,722
	100mm Octogon Boxes	100	0.17	$205.85	136	$27,996	204	$41,993	204	$41,993
	100mm Deep Square Boxes	100	0.03	$377.85	24	$9,068	36	$13,603	36	$13,603
	Shallow Plaster Boxes	100	0.02	$204.60	16	$3,274	24	$4,910	24	$4,910
	Duplex Plugs 110V	100	0.23	$92.75	184	$17,066	276	$25,599	276	$25,599
	Duplex Plug Cover Plates	100	0.21	$29.75	168	$4,998	252	$7,497	252	$7,497
	Water Proof Plug Covers	100	0.02	$201.25	16	$3,220	24	$4,830	24	$4,830
	30A/220V Plug	100	0.01	$472.50	8	$3,780	12	$5,670	12	$5,670
	40A/220V Plug	100	0.01	$472.50	8	$3,780	12	$5,670	12	$5,670
22.8	Light Fixtures									
	Bedroom	item	4	$15.00	3200	$48,000	4800	$72,000	4800	$72,000
	kitchen	item	1	$100.00	800	$80,000	1200	$120,000	1200	$120,000
	Bathroom	item	3	$50.00	2400	$120,000	3600	$180,000	3600	$180,000
	Exterior	item	2	$35.00	1600	$56,000	2400	$84,000	2400	$84,000
	Utility	item	2	$10.00	1600	$16,000	2400	$24,000	2400	$24,000
	Family room	item	2	$15.00	1600	$24,000	2400	$36,000	2400	$36,000

Table 2.10
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
1	FOUNDATION									
1.1	CONCRETE FOUNDATION									
	20 Mpa Concrete - footings & fdn walls	m3	19	$85.00	12160	$1,033,600	18240	$1,550,400	18240	$1,550,400
	150mm compacted sand	m3	25	$6.60	16000	$105,600	24000	$158,400	24000	$158,400
	6 mil vapour barrier	m2	164	$0.32	104960	$33,587	157440	$50,381	157440	$50,381
	75mm concrete in slab on grade, bsmt	m2	90	$6.37	57600	$366,912	86400	$550,368	86400	$550,368
	100mm conc, sidewalk & driveway	m2	10	$9.25	6400	$59,200	9600	$88,800	9600	$88,800
	Form plywood 19mm spruce	m2	14	$20.00	8960	$179,200	13440	$268,800	13440	$268,800
	38x89 spruce whalers etc.	item	225	$0.29	144000	$41,760	216000	$62,640	216000	$62,640
	Form ties	item	750	$0.15	480000	$72,000	720000	$108,000	720000	$108,000
	Nails .89 coated	kg	2.5	$1.34	1600	$2,144	2400	$3,216	2400	$3,216
	Reinforcing steel bars 15mm	m	175	$0.98	112000	$109,760	168000	$164,640	168000	$164,640
	Welded mesh reinforcing	m2	90	$0.96	57600	$55,296	86400	$82,944	86400	$82,944
	Anchor bolts	item	50	$0.38	32000	$12,160	48000	$18,240	48000	$18,240
	4 mil Polyethylene protective sheet	m2	120	$0.23	76800	$17,664	115200	$26,496	115200	$26,496
	FIREPLACE									
	c/w dual metal const extensions & elbows, cap, hearth, & lam. cedar mantel	item	1	$1,148.50	640	$735,040	960	$1,102,560	960	$1,102,560
	100mm clay brick veneer	m2	9	$43.50	5760	$250,560	8640	$375,840	8640	$375,840
2	DAMPPROOFING									
2.1	Asphalt emulsion	litre	18	$1.35	11520	$15,552	17280	$23,328	17280	$23,328
2.2	100mm Weeping tile	m	25	$3.86	16000	$61,760	24000	$92,640	24000	$92,640
	150mm crushed gravel	m3	14	$7.13	8960	$63,885	13440	$95,827	13440	$95,827
4	ENTRY STEPS									
	Precast conc steps 2 risers	item	1	$217.00	640	$138,880	960	$208,320	960	$208,320
	Precast concrete brackets	item	1	$87.00	640	$55,680	960	$83,520	960	$83,520
5	ROUGH CARPENTRY									
5.1	DIMENSION LUMBER									
	38X89 spruce	1000 bf	2.561	$294.00	1639	$481,878	2459	$722,817	2459	$722,817
	38X140 spruce	1000 bf	2.555	$309.00	1635	$505,277	2453	$757,915	2453	$757,915
	38X235 spruce	1000 bf	2.105	$549.00	1347	$739,613	2021	$1,109,419	2021	$1,109,419
	38X38 spruce	1000 bf	0.12	$369.00	77	$28,339	115	$42,509	115	$42,509
	19X140 spruce	1000 bf	0.036	$650.00	23	$14,976	35	$22,464	35	$22,464

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
5.2	**SHEATHING MATERIAL**									
	15.9mm T&G fir	m2	110	$6.45	70400	$454,080	105600	$681,120	105600	$681,120
	12.7mm spruce plywood	m2	90	$4.36	57600	$251,136	86400	$376,704	86400	$376,704
	8mm water board	m2	150	$2.68	96000	$257,280	144000	$385,920	144000	$385,920
5.3	**ADJ. STEEL POSTS**	item	2	$32.99	1280	$42,227	1920	$63,341	1920	$63,341
5.5	**PREMFD WOOD TRUSSES**	item	30	$45.00	19200	$864,000	28800	$1,296,000	28800	$1,296,000
5.2.7	**NAILS**									
	51mm phosphate coated	kg	20	$2.21	12800	$28,288	19200	$42,432	19200	$42,432
	63.5mm phosphate coated	kg	10	$1.41	6400	$9,024	9600	$13,536	9600	$13,536
	89mm phosphate coated	kg	51	$1.34	32640	$43,738	48960	$65,606	48960	$65,606
	51mm hot dipped galv	kg	1	$2.05	640	$1,312	960	$1,968	960	$1,968
	25mm annular	kg	1	$1.73	640	$1,107	960	$1,661	960	$1,661
5.7	**CEDAR DECK**									
	89x89 presure treated posts	m	1.2	$1.20	768	$922	1152	$1,382	1152	$1,382
	38x184 presure treated joists	m	31.1	$31.10	19904	$619,014	29856	$928,522	29856	$928,522
	38x89 cedar decking	m	91	$91.00	58240	$5,299,840	87360	$7,949,760	87360	$7,949,760
	Cedar guard & handrail									
	-38x140 top rail	m	14.4	$2.65	9216	$24,422	13824	$36,634	13824	$36,634
	-38x89 bottom rail	m	14.4	$1.37	9216	$12,626	13824	$18,939	13824	$18,939
	-38x38 vertical rails	m	140	$1.05	89600	$94,080	134400	$141,120	134400	$141,120
5.8	**CONSTRUCTION ADHESIVE**	litre	20	$7.25	12800	$92,800	19200	$139,200	19200	$139,200
5.9	**SHEATHING SCREWS**	item	2600	$0.03	1664000	$49,920	2496000	$74,880	2496000	$74,880
5.11	**WOOD STAIR**	risers	23	$17.30	14720	$254,656	22080	$381,984	22080	$381,984
6	**ROOFING**									
6.1	**ASHALT SHINGLES (85%)**									
	Asphalt shingles @ 32SF/bundle	bundles	52	$9.79	27955	$273,679	41936	$410,553	41936	$410,553
	Black bldg felt #15	m2	156	$0.27	83866	$22,644	125798	$33,966	125798	$33,966
	Roofing nails	kg	16	$2.30	8602	$19,784	12902	$29,675	12902	$29,675
	Tab down cement	litre	10	$1.35	5376	$7,258	8064	$10,886	8064	$10,886
6.2	**ALTERNATE ROOFING - CEDAR SHINGLES (15%)**									
	bundles for 180 m2 (1976.6 SF) @ 20SF	bundle	84.9	21	8150	$171,158	12226	$256,738	12226	$256,738
	Black building paper #15	m2	156	0.27	14976	$4,044	22464	$6,065	22464	$6,065
	Roofing nails	kg	17	2.3	1632	$3,754	2448	$5,630	2448	$5,630

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
6.4	**FLASHING**									
	Alum prefin flashing	m	60	$2.27	38400	$87,168	57600	$130,752	57600	$130,752
6.5	**EAVESTROUGHS & DOWNSPOUTS**									
	Alum eavestroughs	m	36	$2.42	23040	$55,757	34560	$83,635	34560	$83,635
	Alum prefin end caps	units	2	$0.35	1280	$448	1920	$672	1920	$672
	Alum prefin out drops	units	7	$0.70	4480	$3,136	6720	$4,704	6720	$4,704
	Alum prefin elbows	units	7	$1.25	4480	$5,600	6720	$8,400	6720	$8,400
	Alum prefin downspouts	m	25	$2.42	16000	$38,720	24000	$58,080	24000	$58,080
	Alum ferrules	units	36	$0.20	23040	$4,608	34560	$6,912	34560	$6,912
7	**WINDOWS**									
	Window - wood frame, alum sash, D/G horiz slider 1300x900mm	unit	1	$245.00	640	$156,800	960	$235,200	960	$235,200
	Window - wood frame, alum sash, D/G horiz slider 1500x900mm	unit	2	$268.00	1280	$343,040	1920	$514,560	1920	$514,560
	Window - wood frame, alum sash, D/G slider 1200x900mm	unit	4	$235.00	2560	$601,600	3840	$902,400	3840	$902,400
	Window - wood frame, alum clad, D/G slider 2400x1700mm,fixed	unit	1	$580.00	640	$371,200	960	$556,800	960	$556,800
8	**INSULATION & VAPOUR BARRIER**									
8.1	6 mil Polyethylene sheeting	m2	325	$0.23	208000	$47,840	312000	$71,760	312000	$71,760
	Fibrous batt insulation:									
	RSI-2.1	batts	300	$1.91	192000	$366,720	288000	$550,080	288000	$550,080
	RSI-3.5	batts	300	$1.98	192000	$380,160	288000	$570,240	288000	$570,240
8.6	Treated cellulose RSI-6 (attic)	m3	30	$17.63	19200	$338,496	28800	$507,744	28800	$507,744
9	**EXTERIOR FINISHES**									
9.1	**PARGING - Exterior Basement**									
	Parging wall above grade	m3	0.5	$80.00	320	$25,600	480	$38,400	480	$38,400
	Galvanized wire mesh 50x50	m2	10	$0.96	6400	$6,144	9600	$9,216	9600	$9,216
	Nails 30mm galv roofing	kg	2.5	$1.73	1600	$2,768	2400	$4,152	2400	$4,152
9.5	**BRICKWORK - Front facade only**									
	100 Brick veneer facing	m2	44	$43.50	14080	$612,480	21120	$918,720	21120	$918,720
	Mortar c/w mortar colorant	m3	1	$128.00	320	$40,960	480	$61,440	480	$61,440
	Galvanized ties	item	2642	$0.04	909440	$31,830	1364160	$47,746	1364160	$47,746
	Steel Lintels	m	15	$9.00	4800	$43,200	7200	$64,800	7200	$64,800
	Weep Vents	item	21	$0.32	6720	$2,150	10080	$3,226	10080	$3,226
	Black building paper #15	m2	44	$0.27	14080	$3,802	21120	$5,702	21120	$5,702

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	VINYL SIDING (55% of exterior)									
	Alum prefinished fascia	m	29.52	$1.82	9446	$17,192	14170	$25,789	14170	$25,789
	Nails	kg	1.23	$9.00	394	$3,542	590	$5,314	590	$5,314
	Vented alum panels 406mm exposed face	m	17.68	$3.35	5658	$18,953	8486	$28,429	8486	$28,429
	100mm vinyl siding	m2	55.76	$9.42	17843	$168,083	26765	$252,124	26765	$252,124
	Black building paper #15	m2	55.76	$0.27	17843	$4,818	26765	$7,226	26765	$7,226
9.3	**ALTERNATE - ALUMINUM SIDING (10% of exterior)**									
	Siding	m2	55.76	$38.35	1784	$68,429	2676	$102,643	2676	$102,643
	Alum starter strip	m	16.4	$0.74	525	$388	787	$583	787	$583
	Alum outside corner post	m	3.69	$2.40	118	$283	177	$425	177	$425
	Alum J mold	m	19.68	$0.74	630	$466	945	$699	945	$699
	Alum prefinished fascia	m	29.52	$1.82	945	$1,719	1417	$2,579	1417	$2,579
	Black building paper #15	m2	73.8	$0.27	2362	$638	3542	$956	3542	$956
	Nails	kg	1.23	$9.00	39	$354	59	$531	59	$531
9.1	**ALTERNATE - STUCCO (20% of exterior)**									
	Premixed stucco & scratchcoat	m3	1.23	$250.00	157	$39,360	236	$59,040	236	$59,040
	Galvanized wire mesh 50x50	m2	73.8	$0.96	9446	$9,069	14170	$13,603	14170	$13,603
	Nails, 30mm galv roofing	kg	20.5	$1.73	2624	$4,540	3936	$6,809	3936	$6,809
	Black building paper #15	m2	73.8	$0.27	9446	$2,551	14170	$3,826	14170	$3,826
9.2	**ALTERNATE - BEVELED CLEAR CEDAR SIDING (10% of exterior)**									
	190mm exposed face - in board feet	bf	787.2	$1.71	50381	$86,151	75571	$129,227	75571	$129,227
	Cedar trim boards 19x89 - in board feet	bf	16.4	$0.60	1050	$630	1574	$945	1574	$945
	Nails 51 galvanized	kg	2.87	$2.21	184	$406	276	$609	276	$609
	Black building paper #15	m2	90	$0.27	5760	$1,555	8640	$2,333	8640	$2,333
9.5	**ALTERNATE - BRICK (5% of exterior)**									
	100mm Brick Veneer	m2	55.76	$43.50	1784	$77,618	2676	$116,427	2676	$116,427
	Mortar c/w colorant	m3	1.23	$128.00	39	$5,038	59	$7,557	59	$7,557
	Galvanized ties	item	5814	$0.04	186048	$7,442	279072	$11,163	279072	$11,163
	Steel lintels	m	8.22	$9.00	263	$2,367	395	$3,551	395	$3,551
	Weep vents	item	41.5	$0.32	1328	$425	1992	$637	1992	$637
	Black building paper #15	m2	90	$0.27	2880	$778	4320	$1,166	4320	$1,166
9.9	Acrylic sealant caulking (300ml)	tubes	30	$3.90	19200	$74,880	28800	$112,320	28800	$112,320
10	**EXTERIOR DOORS & FRAMES**									
10.1	Insulated metal door & wood frame	item	1	$295.00	640	$188,800	960	$283,200	960	$283,200
10.1	Aluminum storm door	item	1	$250.00	640	$160,000	960	$240,000	960	$240,000
10.11	Patio door 1800x2100	item	1	$685.00	640	$438,400	960	$657,600	960	$657,600

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
10.5	Weatherstripping Threshold	m	1	$5.20	640	$3,328	960	$4,992	960	$4,992
10.6	Weatherstrip door perimeter	m	6	$5.40	3840	$20,736	5760	$31,104	5760	$31,104
11	**INTERIOR WALL/CEILING FINISHES**									
11.1	Drywall									
	Gypsum board 12.7mm	m2	580	$1.95	371200	$723,840	556800	$1,085,760	556800	$1,085,760
	Drywall tape	m	1400	$0.03	896000	$22,400	1344000	$33,600	1344000	$33,600
	Corner bead	m	60	$0.40	38400	$15,360	57600	$23,040	57600	$23,040
	Joint filler	kg	150	$0.60	96000	$57,600	144000	$86,400	144000	$86,400
	Ceiling texture spray	kg	50	$0.70	32000	$22,400	48000	$33,600	48000	$33,600
	Drywall screws	items	4680	$0.03	2995200	$89,856	4492800	$134,784	4492800	$134,784
11.6	**TILE**									
	Ceramic tile	m2	9	$22.60	5760	$130,176	8640	$195,264	8640	$195,264
	Tile adhesive	litre	8	$5.20	5120	$26,624	7680	$39,936	7680	$39,936
	Grout	kg	3	$3.08	1920	$5,914	2880	$8,870	2880	$8,870
	Silicone sealant	tube	1	$5.00	640	$3,200	960	$4,800	960	$4,800
	6.3mm particle board for ceramic tile flr	m2	22	$5.27	14080	$74,202	21120	$111,302	21120	$111,302
12	**FLOORING**									
12.1	**CARPET**									
	Carpet, 32 oz. 100% nylon	m2	112	$17.93	71680	$1,285,222	107520	$1,927,834	107520	$1,927,834
	Foam underpad 6mm	m2	112	$3.58	71680	$256,614	107520	$384,922	107520	$384,922
	Carpet grippers	m	160	$0.33	102400	$33,792	153600	$50,688	153600	$50,688
12.3	**RESILIENT FLOORING**									
	Sheet vinyl flooring - Kit/Bath/Din Rm	m2	47	$11.95	30080	$359,456	45120	$539,184	45120	$539,184
	Flooring adhesive	litre	5	$4.17	3200	$13,344	4800	$20,016	4800	$20,016
13	**PAINTING - Exterior 2 coats**									
	Enamel windows, doors, trim	litre	2	$10.00	1280	$12,800	1920	$19,200	1920	$19,200
	Stain finish cedar decking	litre	2	$7.00	1280	$8,960	1920	$13,440	1920	$13,440
	Stain finish rail	litre	5	$7.00	3200	$22,400	4800	$33,600	4800	$33,600
	PAINTING - Interior 2 coats									
	Enamel windows, doors, trim	litre	8	$10.00	5120	$51,200	7680	$76,800	7680	$76,800
	Semigloss or flat latex to drywall	litre	64	$9.00	40960	$368,640	61440	$552,960	61440	$552,960
	Stain finish doors & frames	litre	10	$9.00	6400	$57,600	9600	$86,400	9600	$86,400
	Stain finish bifold doors & frames	litre	2	$7.00	1280	$8,960	1920	$13,440	1920	$13,440
	Semigloss baseboards & shelves	litre	10	$10.00	6400	$64,000	9600	$96,000	9600	$96,000
	Stain finish handrails	litre	1	$7.00	640	$4,480	960	$6,720	960	$6,720
	Stain finish balustrade	litre	1	$7.00	640	$4,480	960	$6,720	960	$6,720

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
14	MILLWORK									
14.1	Int hollow core wood doors, wood frames									
	2032x711mm	item	3	$68.00	1920	$130,560	2880	$195,840	2880	$195,840
	2032x762mm	item	6	$68.00	3840	$261,120	5760	$391,680	5760	$391,680
14.3	CLOSET DOORS - wood bifolds c/w hardware									
	2032x610mm	item	8	$36.00	5120	$184,320	7680	$276,480	7680	$276,480
	2032x750mm	item	2	$38.40	1280	$49,152	1920	$73,728	1920	$73,728
	2032x914mm	item	2	$40.50	1280	$51,840	1920	$77,760	1920	$77,760
14.6	WINDOW/DOOR TRIM									
	Untin wood casing 12.7x50mm	m	126	$0.74	80640	$59,674	120960	$89,510	120960	$89,510
14.7	BASEBOARD									
	Untin wood baseboard 12.7x70mm	m	227	$0.82	145280	$119,130	217920	$178,694	217920	$178,694
14.8	BATHROOM VANITIES									
	Wood cabinet & countertop	m	2.7	$278.85	1728	$481,853	2592	$722,779	2592	$722,779
14.9	KITCHEN CUPBOARDS									
	Lower cupboards	m	4	$297.00	2560	$760,320	3840	$1,140,480	3840	$1,140,480
	Upper cupboards	m	4	$150.00	2560	$384,000	3840	$576,000	3840	$576,000
	Range hood	item	1	$84.00	640	$53,760	960	$80,640	960	$80,640
14.1	CUPBOARD & CLOSET SHELVES									
	Plywood c/w hardwood nosing	m	13.9	$11.20	8896	$99,635	13344	$149,453	13344	$149,453
14.11	CLOTHES ROD - Closets									
	Chrome plated rod 25mm diam	m	21	$5.10	13440	$68,544	20160	$102,816	20160	$102,816
15	HARDWARE									
15.1	Entry lockset, house	item	2	$29.99	1280	$38,387	1920	$57,581	1920	$57,581
15.3	Privacy lockset, house	item	7	$23.29	4480	$104,339	6720	$156,509	6720	$156,509
15.4	Passage latchset, house	item	3	$15.56	1920	$29,875	2880	$44,813	2880	$44,813
15.7	Door stop	item	8	$1.09	5120	$5,581	7680	$8,371	7680	$8,371
	Security deadbolt	item	1	$16.50	640	$10,560	960	$15,840	960	$15,840
	Mailbox	item	1	$14.00	640	$8,960	960	$13,440	960	$13,440
	House numbers	item	5	$7.00	3200	$22,400	4800	$33,600	4800	$33,600
16	BATHROOM ACCESSORIES									
16.1	Toilet paper holder, chrome	item	3	$6.80	1920	$13,056	2880	$19,584	2880	$19,584
16.2	Towel bar chrome 610mm	item	3	$8.80	1920	$16,896	2880	$25,344	2880	$25,344
16.3	Mirror c/w clips 6x12x900mm	item	3	$20.00	1920	$38,400	2880	$57,600	2880	$57,600

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used in Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
16.7	Soap dish & grab, metal	item	2	$9.60	1280	$12,288	1920	$18,432	1920	$18,432
16.8	Medicine cabinet	item	3	$65.00	1920	$124,800	2880	$187,200	2880	$187,200
16.9	Robe hook, chrome	item	3	$2.60	1920	$4,992	2880	$7,488	2880	$7,488
	25mm diam. metal shower curtain rod	item	2	$12.80	1280	$16,384	1920	$24,576	1920	$24,576
20	PLUMBING									
20.1	WATER CLOSETS									
	Water closet, Crane Radcliffe	item	3	$145.98	1920	$280,282	2880	$420,422	2880	$420,422
	Beneke 2000 closet seat, white	item	3	$7.27	1920	$13,958	2880	$20,938	2880	$20,938
	Setting seal radiateor G-230	item	3	$0.93	1920	$1,786	2880	$2,678	2880	$2,678
	Flexible supplies,30cm	item	3	$1.09	1920	$2,093	2880	$3,139	2880	$3,139
	Escutcheons copper,15mm	item	3	$0.15	1920	$288	2880	$432	2880	$432
	R19 stops,15mm	item	3	$2.44	1920	$4,685	2880	$7,027	2880	$7,027
20.2	ENAMELLED STEEL BATHROOM SINKS									
	Crane Coronette, white 1.306	item	3	$57.01	1920	$109,459	2880	$164,189	2880	$164,189
	Emco 4" centre set, 2-107	item	3	$31.64	1920	$60,749	2880	$91,123	2880	$91,123
	Emco pop-up drain, 2123	item	3	$17.81	1920	$34,195	2880	$51,293	2880	$51,293
	Flexible supplies c/w stops,30mm	set	3	$8.35	1920	$16,032	2880	$24,048	2880	$24,048
	Chrome P traps,25mm	item	3	$15.02	1920	$28,838	2880	$43,258	2880	$43,258
20.3	BATHTUB									
	Fibreglass tub/shower unit	item	2	$540.00	1280	$691,200	1920	$1,036,800	1920	$1,036,800
	Tub filler roughing-in, Emco 2271	item	2	$38.13	1280	$48,806	1920	$73,210	1920	$73,210
	Tub filler trim, Emco 2270	item	2	$34.54	1280	$44,211	1920	$66,317	1920	$66,317
	Bath drain Emco, 2800,40mm	item	2	$27.45	1280	$35,136	1920	$52,704	1920	$52,704
20.4	KITCHEN SINK									
	Dbl compartment stainless steel sinks, Steel Queen QDL 203	item	1	$167.23	640	$107,027	960	$160,541	960	$160,541
	Continuous wastes	item	1	$18.75	640	$12,000	960	$18,000	960	$18,000
	Belanger endout contin. waste	item	1	$18.75	640	$12,000	960	$18,000	960	$18,000
	Emco 2160 deck faucets	item	1	$38.63	640	$24,723	960	$37,085	960	$37,085
	1-1/2 brass P traps	item	1	$14.49	640	$9,274	960	$13,910	960	$13,910
20.70	HW HEATER, John Wood JW402	item	1	$307.26	640	$196,646	960	$294,970	960	$294,970
20.8	PIPE,FITTINGS AND ACCESSORIES									
	Y's or Ty's ABS,100mm	item	5	$9.48	3200	$30,336	4800	$45,504	4800	$45,504
	Y's or Ty's ABS,75mm	item	8	$3.99	5120	$20,429	7680	$30,643	7680	$30,643
	Y's or Ty's ABS,50mm	item	4	$2.10	2560	$5,376	3840	$8,064	3840	$8,064
	Y's or Ty's ABS,40mm	item	3	$1.13	1920	$2,170	2880	$3,254	2880	$3,254

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	Ells, 90 or 45 deg,100mm	item	7	$6.66	4480	$29,837	6720	$44,755	6720	$44,755
	Ells, 90 or 45 deg,75mm	item	11	$3.32	7040	$23,373	10560	$35,059	10560	$35,059
	Ells, 90 or 45 deg,50mm	item	12	$1.41	7680	$10,829	11520	$16,243	11520	$16,243
	Ells, 90 or 45 deg,40mm	item	17	$0.88	10880	$9,574	16320	$14,362	16320	$14,362
	Couplings - ABS,100mm	item	3	$2.66	1920	$5,107	2880	$7,661	2880	$7,661
	Couplings - ABS,75mm	item	4	$1.43	2560	$3,661	3840	$5,491	3840	$5,491
	Couplings - ABS,50mm	item	3	$0.63	1920	$1,210	2880	$1,814	2880	$1,814
	Couplings - ABS,40mm	item	10	$0.41	6400	$2,624	9600	$3,936	9600	$3,936
	Pipe ABS,100mm	metre	7.6	$3.97	4864	$19,310	7296	$28,965	7296	$28,965
	Pipe ABS,75mm	metre	18.6	$2.58	11904	$30,712	17856	$46,068	17856	$46,068
	Pipe ABS,50mm	metre	10	$1.36	6400	$8,704	9600	$13,056	9600	$13,056
	Pipe ABS,40mm	metre	31	$0.95	19840	$18,848	29760	$28,272	29760	$28,272
	Clean Outs ABS Line,100mm	item	2	$13.59	1280	$17,395	1920	$26,093	1920	$26,093
	Clean Outs ABS Line,50mm	item	3	$4.44	1920	$8,525	2880	$12,787	2880	$12,787
	Clean Outs ABS Line,40mm	item	2	$2.70	1280	$3,456	1920	$5,184	1920	$5,184
	Traps, ABS ,100x75mm	item	1	$25.04	640	$16,026	960	$24,038	960	$24,038
	Trap Adapter,40mm	item	2	$1.14	1280	$1,459	1920	$2,189	1920	$2,189
	Trap deep seal,75mm	item	1	$12.26	640	$7,850	960	$11,789	960	$11,789
	Line C.O,m ABS,50mm	item	1	$4.44	640	$2,842	960	$4,262	960	$4,262
	Weeping tile c/w back water valve and c.o.,75mm	item	1	$67.91	640	$43,462	960	$65,194	960	$65,194
	Traps, ABS,40mm	item	4	$2.37	2560	$6,067	3840	$9,101	3840	$9,101
	Increaser, ABS,100x75mm	item	2	$3.59	1280	$4,595	1920	$6,893	1920	$6,893
	Bushings, ABS,75mm	item	2	$2.20	1280	$2,816	1920	$4,224	1920	$4,224
	Expension Joint ABS,75mm	item	1	$16.90	640	$10,816	960	$16,224	960	$16,224
	Floor Flange,100x75mm	item	4	$5.87	2560	$15,027	3840	$22,541	3840	$22,541
	Flashing aluminum high cone,100mm	item	1	$12.73	640	$8,147	960	$12,221	960	$12,221
	Test cape PVC,50mm	item	1	$0.76	640	$486	960	$730	960	$730
	Floor drain grate, ABS,100mm	item	1	$6.28	640	$4,019	960	$6,029	960	$6,029
	ABS cement	litre	1.9	$7.73	1216	$9,400	1824	$14,100	1824	$14,100
	ABS cleaner	litre	1	$5.74	640	$3,674	960	$5,510	960	$5,510
	Suspension strap,20mm	metre	3	$ .29	1920	$6,317	2880	$9,475	2880	$9,475
	Stenco access cover,150x150mm	item	2	$9.62	1280	$12,314	1920	$18,470	1920	$18,470
	Test cap,100mm	item	1	$1.40	640	$896	960	$1,344	960	$1,344
	Test cap,75mm	item	1	$1.03	640	$659	960	$989	960	$989
	Test cap,50mm	item	1	$0.76	640	$486	960	$730	960	$730
	Copper pipe type M,15mm	m	12	$2.29	7680	$17,587	11520	$26,381	11520	$26,381
	Couplings C x C,15mm	item	4	$0.43	2560	$1,101	3840	$1,651	3840	$1,651
	90 deg Ells, C x C,15mm	item	10	$0.44	6400	$2,816	9600	$4,224	9600	$4,224
	Tees C x C,20mm	item	2	$1.95	1280	$2,496	1920	$3,744	1920	$3,744
	Tees C x C,15mm	item	5	$0.81	3200	$2,592	4800	$3,888	4800	$3,888
	Slope C x C,15mm	item	2	$4.17	1280	$5,338	1920	$8,006	1920	$8,006
	Drop eared ell,15mm	item	1	$2.18	640	$1,395	960	$2,093	960	$2,093

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used in Row House Construction For 1989 -1921

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
	Adapter, C x F,15mm	Item	1	$1.17	640	$748	960	$1,123	960	$1,123
	Adapter, C x M,15mm	Item	2	$1.31	1280	$1,677	1920	$2,515	1920	$2,515
	Solder,100g	Item	1	$0.69	640	$442	960	$662	960	$662
	Galv. E2's,75mm	Item	3	$1.56	1920	$2,995	2880	$4,493	2880	$4,493
	Galv. pipe, 20 ga.,75mm	m	2	$3.48	1280	$4,454	1920	$6,682	1920	$6,682
21	HVAC									
21.1	HEATING & VENTILATION									
	Valve Assembly	Item	1	$130.00	640	$83,200	960	$124,800	960	$124,800
21.2	FORCED AIR FURNACE									
	Conventional Gas Fired Hot Air Furnace	Item	1	$767.00	640	$490,880	960	$736,320	960	$736,320
21.3	DUCTING									
	Galvanized Sheet Metal Duct	m	37.5	$23.40	24000	$561,600	36000	$842,400	36000	$842,400
21.4	THERMOSTAT	Item	1	$19.50	640	$12,480	960	$18,720	960	$18,720
21.5	HUMIDIFIER	Item	1	$113.75	640	$72,800	960	$109,200	960	$109,200
21.9	FLEXIBLE DUCTING	Item	3	$11.38	1920	$21,850	2880	$32,774	2880	$32,774
21.10	DUCT INSULATION	m	9.5	$21.55	6080	$131,024	9120	$196,536	9120	$196,536
21.13	FANS									
	Bathroom Fan and Duct	Item	2	$78.00	1280	$99,840	1920	$149,760	1920	$149,760
	Range Hood Fan and Duct	Item	1	$162.50	640	$104,000	960	$156,000	960	$156,000
21.15	METAL CHIMNEY/VENT SYSTEM	Item	1	$255.13	640	$163,283	960	$244,925	960	$244,925
	ELECTRICAL									
22.1	EXTERIOR service items									
	25.4mm Weatherhead	100	0.01	$495.80	6	$3,173	10	$4,760	10	$4,760
	Cleves	100	0.01	$580.00	6	$3,712	10	$5,568	10	$5,568
	Meter base	100	0.01	$43.00	6	$275	10	$413	10	$413
22.2	CONDUIT 1.25 Emt	100m	0.02	$80.20	13	$1,027	19	$1,540	19	$1,540
22.3	MAIN SWITCH & Breaker Box									
	25.4mm Emt connectors	100	0.04	$85.28	26	$2,183	38	$3,275	38	$3,275

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used In Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	100 amp 32 circuit panel	item	1	$79.80	640	$51,072	960	$76,608	960	$76,608
	#6 Bare copper wire	100m	0.08	$160.70	38	$6,171	58	$9,256	58	$9,256
	Screws #8x25mm	100	0.4	$3.83	256	$980	384	$1,471	384	$1,471
22.4	ELEC. CIRCUIT BREAKERS									
	15 amp Single pole breakers	item	5	$4.86	3200	$15,616	4800	$23,424	4800	$23,424
	15 amp Double pole breakers	item	2	$10.77	1280	$13,786	1920	$20,678	1920	$20,678
	15 amp Ground fault breakers	item	2	$53.50	1280	$68,480	1920	$102,720	1920	$102,720
	40 amp Double pole breakers	item	1	$42.50	640	$27,200	960	$40,800	960	$40,800
	30 amp Double pole breakers	item	1	$42.50	640	$27,200	960	$40,800	960	$40,800
22.5	INSULATED WIRE									
	#3x-Link, copper wire	m	17.4	$5.77	11136	$64,255	16704	$96,382	16704	$96,382
	9.5 flex	km	6	$12.00	3840	$46,080	5760	$69,120	5760	$69,120
	12.7mm cable straps	100	0.24	$22.05	154	$3,387	230	$5,080	230	$5,080
	25.4 m Cable Straps	100	0.04	$45.15	26	$1,156	38	$1,734	38	$1,734
	Cable Straps	100	1.4	$2.50	896	$2,240	1344	$3,360	1344	$3,360
	20/20 Connectors	100	0.2	$16.00	128	$2,048	192	$3,072	192	$3,072
	Range Cable Connector	100	0.04	$105.10	26	$2,691	38	$4,036	38	$4,036
	Ground Clamp	100	0.01	$170.57	6	$1,092	10	$1,637	10	$1,637
	9.5mm Flex Connectors	100	0.03	$37.95	19	$729	29	$1,093	29	$1,093
	Marr Connectors	item	60	$0.25	38400	$9,600	57600	$14,400	57600	$14,400
	2-14 Insulated Copper Wire	m	336	$1.19	215040	$255,898	322560	$383,846	322560	$383,846
	3-14 Insulated Copper Wire	m	61	$1.99	39040	$77,690	58560	$116,534	58560	$116,534
	3-8 Insulated Copper Wire	m	76	$7.02	48640	$341,453	72960	$512,179	72960	$512,179
	3-10 Insulated Copper Wire	m	46	$4.11	29440	$120,998	44160	$181,498	44160	$181,498
22.6	JUNCTION & OUTLET BOXES									
	1104 Switch Boxes	100	0.39	$161.80	250	$40,385	374	$60,578	374	$60,578
	100mm Octagon Boxes	100	0.17	$205.85	109	$22,396	163	$33,595	163	$33,595
	100mm Deep Square Boxes	100	0.03	$377.85	19	$7,255	29	$10,882	29	$10,882
	Shallow Plaster Boxes	100	0.02	$204.60	13	$2,619	19	$3,928	19	$3,928
	Duplex Plugs 110V	100	0.23	$92.75	147	$13,653	221	$20,479	221	$20,479
	Duplex Plug Cover Plates	100	0.21	$29.75	134	$3,998	202	$5,998	202	$5,998
	Water Proof Plug Covers	100	0.02	$201.25	13	$2,576	19	$3,864	19	$3,864
	30A/220V Plug	100	0.01	$472.50	6	$3,024	10	$4,536	10	$4,536
	40A/220V Plug	100	0.01	$472.50	6	$3,024	10	$4,536	10	$4,536
22.8	Light fixtures									
	Bedrom	item	4.00	$15.00	2560	$38,400	3840	$57,600	3840	$57,600
	Kitchen	item	1.00	$100.00	640	$64,000	960	$96,000	960	$96,000
	Bathroom	item	3.00	$50.00	1920	$96,000	2880	$144,000	2880	$144,000

Table 2.10 (Continued)
Projected Quantities Of Residential Building Products
Used in Row House Construction For 1989 -1991

CAT#	ROW HOUSE	UNITS	QTY	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	Exterior	Item	2.00	$35.00	1280	$44,800	1920	$67,200	1920	$67,200
	utility	Item	2.00	$10.00	1280	$12,800	1920	$19,200	1920	$19,200
	Family room	Item	2.00	$15.00	1280	$19,200	1920	$28,800	1920	$28,800

Table 2.11
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
1	FOUNDATIONS									
1.1	CONCRETE FOUNDATION									
	Concrete 25mPa	m3	2.71	$82.54	488	$45,141	732	$67,712	732	$67,712
	Concrete 20mPa	m3	1.92	$85.00	346	$29,376	518	$44,064	518	$44,064
	Form plywood 19mm spruce	m2	4.80	$20.00	864	$17,280	1296	$25,920	1296	$25,920
	38x89 spruce	1000bf	0.02	$294.00	3	$953	5	$1,429	5	$1,429
	38x38 spruce	1000bf	0.01	$369.00	2	$797	3	$1,196	3	$1,196
	38x191 spruce	1000bf	0.09	$324.00	16	$5,249	24	$7,873	24	$7,873
	Form ties	1000	40.00	$420.00	7200	$3,024,000	10800	$4,536,000	10800	$4,536,000
	Nails .89 coated	kg	6.71	$1.34	1208	$1,618	1812	$2,428	1812	$2,428
	Reinforcing steel bars 15mm	kg	77.10	$0.69	13878	$9,576	20817	$14,364	20817	$14,364
	Welded mesh reinforcing	m2	21.28	$0.96	3830	$3,677	5746	$5,516	5746	$5,516
	Anchor bolts	unit	4.60	$0.38	828	$315	1242	$472	1242	$472
	Polyethylene sheet	m2	23.40	$0.23	4212	$969	6318	$1,453	6318	$1,453
2	WEEPING TILE/DAMP-PROOFING									
	Plastic perforated pipe	m	4.50	$1.93	810	$1,563	1215	$2,345	1215	$2,345
	Asphalt emulsion	litre	3.70	$1.35	666	$899	999	$1,349	999	$1,349
	Weeping tile rock	m3	0.49	$3.86	88	$340	132	$511	132	$511
	Fibreglas batt insulation R12	batt	1.80	$1.19	324	$386	486	$578	486	$578
4	ENTRY STEPS									
4.3	Wrt iron rail-balcony & stair	m	7.65	$104.00	1377	$143,208	2066	$214,812	2066	$214,812
	Stair hand rail on wall	m	2.52	$53.00	454	$24,041	680	$36,061	680	$36,061
5	ROUGH FRAMING									
5.1	DIMENSION LUMBER									
	38x89 spruce	1000bf	1.30	$294.00	234	$68,796	351	$103,194	351	$103,194
	38X140 spruce	1000bf	1.18	$309.00	212	$65,632	319	$98,447	319	$98,447
	38X235 spruce- 2x10 joists	1000bf	1.77	$549.00	319	$174,911	478	$262,367	478	$262,367
5.2	SHEATHING MATERIAL									
	19mm spruce plywood	m2	66.80	$20.00	12024	$240,480	18036	$360,720	18036	$360,720
	12.7mm spruce ply - roof	m2	24.50	$3.09	4410	$13,627	6615	$20,440	6615	$20,440
	8mm wafer board - wall	m2	33.90	$2.68	6102	$16,353	9153	$24,530	9153	$24,530
	6.3mm particle board	m2	17.00	$5.27	3060	$16,126	4590	$24,189	4590	$24,189
	Fibre board	m2	63.80	$3.09	11484	$35,486	17226	$53,228	17226	$53,228
5.2.7	NAILS									
	89mm phosphate coated	kg	14.96	$1.34	2693	$3,608	4039	$5,413	4039	$5,413

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	63.5mm phosphate coated	kg	3.20	$1.41	576	$812	864	$1,218	864	$1,218
	51mm phosphate coated	kg	4.51	$1.44	812	$1,169	1218	$1,753	1218	$1,753
	25mm coated	kg	0.39	$1.30	70	$91	105	$137	105	$137
	25mm annular	kg	0.60	$1.73	108	$187	162	$280	162	$280
5.11	STAIRS Premfd wood									
	7 risers 6 treads 1250 wide	item	0.50	$121.31	90	$10,918	135	$16,377	135	$16,377
6	ROOFING									
6.4	Galv iron flashing	m	4.20	$2.23	756	$1,686	1134	$2,529	1134	$2,529
6.6	BUILT-UP ROOFING									
	Black building felt #15	m2	148.00	$0.27	26640	$7,193	39960	$10,789	39960	$10,789
	Roof underlay sheet-vented	m2	25.00	$2.75	4500	$12,375	6750	$18,563	6750	$18,563
	Pea gravel	kg	492.00	$0.04	88560	$3,542	132840	$5,314	132840	$5,314
	Rigid styrene insul RSI-6	m2	24.59	$27.54	4426	$121,898	6639	$182,846	6639	$182,846
	Nails 30mm	kg	2.10	$37.56	378	$14,198	567	$21,297	567	$21,297
	Rubberized membrane	m3	3.13	$39.00	563	$21,973	845	$32,959	845	$32,959
7	WINDOWS									
	Window - alum frame, alum sash, sealed D/G 2.4 x 2.55	item	0.17	$967.00	30	$29,068	45	$43,602	45	$43,602
	Window - wood frame, alum sash, D/G slider 2.4 x 0.9	item	0.25	$390.00	45	$17,550	68	$26,325	68	$26,325
	ditto - 1.5 x 0.9	item	1.17	$266.00	210	$56,296	315	$84,444	315	$84,444
	ditto - 0.9 x 0.9	item	0.12	$201.00	22	$4,342	32	$6,512	32	$6,512
8	INSULATION & VAP BARRIER									
	Polyethylene sheeting .1mm	m2	89.90	$0.23	16182	$3,722	24273	$5,583	24273	$5,583
	Fibrglass insul RSI-3.5 (ex. walls)	batt	50.10	$1.98	9018	$17,856	13527	$26,783	13527	$26,783
	Acoustic insul.RSI 3.5(int. walls)	batt	157.00	$1.98	28260	$55,955	42390	$83,932	42390	$83,932
	Polystyrene insul 50mm	m2	5.46	$6.88	983	$6,762	1474	$10,142	1474	$10,142
9	EXTERIOR FINISHES									
	Black bldg paper #15	m2	39.00	$0.27	7020	$1,895	10530	$2,843	10530	$2,843
9.1	STUCCO									
	Stucco	m3	0.67	$160.00	120	$19,152	180	$28,728	180	$28,728
	Parging	m3	0.03	$80.00	5	$403	8	$605	8	$605
	Galvanized wire mesh 50x50	m2	31.64	$0.96	5695	$5,467	8543	$8,201	8543	$8,201
	Nails 30mm galv roofing	kg	0.66	$2.84	119	$337	178	$506	178	$506

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
9.2	**CEDAR COLUMNS**									
	19x140 Cedar	m	9.62	$2.25	1732	$3,896	2597	$5,844	2597	$5,844
	Galvanized nails, 51mm	kg	0.22	$4.65	40	$184	59	$276	59	$276
9.3	**ALUMINUM FASCIA**									
	Aluminium siding	m2	4.71	$36.35	848	$32,513	1272	$48,770	1272	$48,770
	Starter strip	m	94.00	$2.40	16920	$40,608	25380	$60,912	25380	$60,912
	Nails,aluminium	kg	0.20	$9.00	36	$324	54	$486	54	$486
9.7	**SOFFITS**									
	Vented alum panels 406mm exposed face	m	6.88	$3.35	1238	$4,149	1858	$6,223	1858	$6,223
9.9	Acrylic sealant (300ml)	tubes	5.70	$3.90	1026	$4,001	1539	$6,002	1539	$6,002
10	**EXTERIOR DOORS & FRAMES**									
	SCW dr & stl frm + sidelite									
	20min label 0.9 x 2.1	item	0.33	$680.00	59	$40,392	89	$60,588	89	$60,588
	SCW dr+stl frm 0.9 x 2.1	item	1.04	$450.00	187	$84,240	281	$126,360	281	$126,360
	Prehung SCW dr+wd frm 0.85 x 2.1	item	1.00	$365.00	180	$65,700	270	$98,550	270	$98,550
	Hollow metal dr+stl frame 1 hr rated 0.9 x 2.1	item	0.75	$250.00	135	$33,750	203	$50,625	203	$50,625
10.11	Patio door 2.4 x 1.8	item	0.75	$950.00	135	$128,250	203	$192,375	203	$192,375
	Prehung glass & alum dr in alum frm + sidelites(commercial) 0.9 x 2.1 2 sidelites	item	0.12	$2,545.00	22	$54,972	32	$82,458	32	$82,458
	INTERIOR WALL/CEILING FINISHES									
11	**DRYWALL**									
11.1	Gypsum board 12.7mm	m2	184.00	$1.95	33120	$64,584	49680	$96,876	49680	$96,876
	Gypsum board 15.9mm	m2	22.70	$2.54	4086	$10,378	6129	$15,568	6129	$15,568
	Gypsum bd 12.7mm Type X	m2	32.43	$2.33	5837	$13,601	8756	$20,402	8756	$20,402
	Gypsum bd 15.9mm Type X	m2	91.00	$2.54	16380	$41,605	24570	$62,408	24570	$62,408
	Drywall tape	m	362.00	$0.03	65160	$1,629	97740	$2,444	97740	$2,444
	Corner bead	m	59.80	$0.40	10764	$4,306	16146	$6,458	16146	$6,458
	Joint filler	kg	89.00	$0.60	16020	$9,612	24030	$14,418	24030	$14,418
	Ceiling texture spray	kg	35.00	$0.70	6300	$4,410	9450	$6,615	9450	$6,615
	Drywall screws 30mm	1000	552.00	$26.00	99360	$2,583,360	149040	$3,875,040	149040	$3,875,040
	Drywall screws 38mm	1000	3218.00	$28.80	579240	$16,682,112	868860	$25,023,168	868860	$25,023,168
	TILE									
11.6	Ceramic tile 100x100 glazed	m2	6.39	$22.60	1150	$25,995	1725	$38,992	1725	$38,992
	Tile adhesive	litre	6.00	$5.20	1080	$5,616	1620	$8,424	1620	$8,424

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	Grout	kg	2.60	$3.08	468	$1,441	702	$2,162	702	$2,162
	Silicone sealant,tube	300ml	1.00	$5.00	180	$900	270	$1,350	270	$1,350
12	FLOORING									
12.1	CARPET									
	Carpet, 8.56kg/m2 wt.	m2	60.50	$17.93	10890	$195,258	16335	$292,887	16335	$292,887
	Foam underpad 8mm	m2	60.50	$3.58	10890	$38,986	16335	$58,479	16335	$58,479
	Carpet grippers	m	78.00	$0.33	14040	$4,633	21060	$6,950	21060	$6,950
12.3	RESILIENT FLOORING									
	Sheet vinyl flooring	m2	17.00	$11.95	3060	$36,567	4590	$54,851	4590	$54,851
	Flooring adhesive	litre	1.80	$4.17	324	$1,351	486	$2,027	486	$2,027
13	PAINTING									
13.1	Latex paint eggshell finish	litre	115.80	$5.00	20844	$104,220	31266	$156,330	31266	$156,330
14.1	MILLWORK (CABINETWORK)									
	Int hollow core wood doors, wood frames									
	711x2032	item	1.00	$68.00	180	$12,240	270	$18,360	270	$18,360
	762x2032	item	1.00	$68.00	180	$12,240	270	$18,360	270	$18,360
14.3	Closet bifold wd drs & hdwr									
	2032 x 1800	item	1.17	$81.00	210	$17,015	315	$25,522	315	$25,522
	2032 x 1500	item	0.58	$76.80	104	$8,018	157	$12,027	157	$12,027
	2032 x 1200	item	0.25	$72.00	45	$3,240	68	$4,860	68	$4,860
	2032 x 914	item	0.58	$40.50	104	$4,228	157	$6,342	157	$6,342
	2032 x 610	item	0.67	$36.00	121	$4,342	181	$6,512	181	$6,512
14.6	WINDOW/DOOR TRIM									
	Untin wood casing 12.7x50	m	46.00	$0.74	8280	$6,127	12420	$9,191	12420	$9,191
	25mm finishing nails	kg	0.10	$3.40	18	$61	27	$92	27	$92
14.7	BASEBOARD									
	Untin wd baseboard 12.7x70	m	116.00	$0.82	20880	$17,122	31320	$25,682	31320	$25,682
14.8	BATHROOM VANITIES									
	Wood cabinet & top	m	1.20	$278.85	216	$60,232	324	$90,347	324	$90,347
14.9	KITCHEN CUPBOARDS									
	Lower cupboards	m	2.90	$297.00	522	$155,034	783	$232,551	783	$232,551
	Upper cupboards	m	4.13	$150.00	743	$111,510	1115	$167,265	1115	$167,265

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	Range hood	item	1.00	$84.00	180	$15,120	270	$22,680	270	$22,680
14.1	CUPBOARD & CLOSET SHELVES									
	Plywd c/w hardwd nosing	m	21.00	$11.20	3780	$42,336	5670	$63,504	5670	$63,504
14.11	CLOTHES ROD - Closets									
	Chrm plated rod 25mm diam	m	3.00	$5.10	540	$2,754	810	$4,131	810	$4,131
15	HARDWARE									
	Entry lockset, res. std	item	1.05	$29.99	189	$5,668	284	$8,502	284	$8,502
	Security deadbolt	item	1.05	$16.50	189	$3,119	284	$4,678	284	$4,678
	Privacy lockset, res. std.	item	1.00	$23.29	180	$4,192	270	$6,288	270	$6,288
	Passage latchset, res. std.	item	3.38	$15.56	608	$9,467	913	$14,200	913	$14,200
	Door closer	item	0.46	$18.99	83	$1,572	124	$2,359	124	$2,359
16	BATHROOM ACCESSORIES									
16.1	Toilet paper holder, chrome	item	1.00	$6.80	180	$1,224	270	$1,836	270	$1,836
16.2	Towel bar chrome 610mm	item	2.00	$8.80	360	$3,168	540	$4,752	540	$4,752
16.3	Mirror c/w clips 6x12x900	item	1.00	$20.00	180	$3,600	270	$5,400	270	$5,400
16.4	Shower rod, chrome 25mm	item	1.00	$12.80	180	$2,304	270	$3,456	270	$3,456
16.7	Soap dish & grab, metal	item	1.00	$9.60	180	$1,728	270	$2,592	270	$2,592
16.8	Medicine cabinet	item	1.00	$65.00	180	$11,700	270	$17,550	270	$17,550
16.9	Robe hook, chrome	item	2.00	$2.60	360	$936	540	$1,404	540	$1,404
17	MISCELLANEOUS ITEMS									
17.2	Mailbox 810x450 (24 boxes)	item	0.04	$749.00	7	$5,393	11	$8,089	11	$8,089
20	PLUMBING									
20.1	TOILETS									
	Crane Radcliffe white	item	1.00	$108.94	180	$19,609	270	$29,414	270	$29,414
	Beneke 2000 closet seat, white	item	1.00	$7.27	180	$1,309	270	$1,963	270	$1,963
	Setting seal radiator specialty, G-230	item	1.00	$0.93	180	$167	270	$251	270	$251
	Flexible supplies	cm	30.00	$1.09	5400	$5,886	8100	$8,829	8100	$8,829
	Escutcheons copper,15mm	item	3.83	$0.15	690	$103	1035	$155	1035	$155
	R19 stops,15mm	item	5.83	$2.44	1050	$2,562	1575	$3,843	1575	$3,843
20.2	BATHROOM SINK									
	Crane Coronette white, 1-306	item	1.33	$46.73	240	$11,215	360	$16,823	360	$16,823
	Emco 4" center set 2-0107	item	1.33	$25.93	240	$6,223	360	$9,335	360	$9,335
	Emco pop-up drain, 2123	item	1.33	$14.60	240	$3,504	360	$5,256	360	$5,256
	Flexible supplies	m	0.15	$6.84	27	$185	41	$277	41	$277
	Chrome P trape,25mm	item	0.13	$12.31	23	$277	34	$415	34	$415

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
20.3	**ENAMELLED STEEL BATHTUB**									
	CRANE Chateau white, 2-142	item	1.00	$240.06	180	$43,211	270	$64,816	270	$64,816
	Tub filler roughing-in, Emco 2271	item	1.00	$36.13	180	$6,863	270	$10,295	270	$10,295
	Tub filler trim, Emco 2270	item	1.00	$34.54	180	$6,217	270	$9,326	270	$9,326
	Bath drain Emco, 2800,40mm	item	1.00	$27.45	180	$4,941	270	$7,412	270	$7,412
20.4	**KITCHEN DBL SINKS**									
	compartment Stainless Steel Queen QDL	item	1.04	$137.07	188	$25,701	281	$38,551	281	$38,551
	Continuous wastes Belanger endout,40m	item	1.04	$15.37	188	$2,882	281	$4,323	281	$4,323
	Emco 2160 deck faucets	item	1.04	$31.66	188	$5,936	281	$8,904	281	$8,904
	1 1/2" brass traps	item	1.04	$11.88	188	$2,228	281	$3,341	281	$3,341
20.7	**HOT WATER TANK**									
	O.A. Smith c/w pressure relief valve	item	0.04	$1,672.80	8	$12,546	11	$18,819	11	$18,819
20.8	**PIPE, FITTINGS AND ACCESSORIES**									
	C x C, 90 deg Ells,15mm	item	8.33	$0.32	1500	$480	2250	$720	2250	$720
	C x C, 90 deg Ells,20mm	item	241.00	$0.76	43380	$32,969	65070	$49,453	65070	$49,453
	C x C, 90 deg Ells,25mm	item	0.33	$1.80	60	$108	90	$162	90	$162
	C x C, 90 deg Ell,30mm	item	2.08	$3.55	375	$1,331	562	$1,997	562	$1,997
	C x C, 90 deg Ell,40mm	item	2.42	$3.59	436	$1,564	653	$2,346	653	$2,346
	C x C, 90 deg Ell,50mm	item	0.13	$6.81	23	$153	34	$230	34	$230
	C x C, 45 deg Ell,30mm	item	0.54	$3.14	98	$306	146	$459	146	$459
	C x C, 45 deg Ell,40mm	item	0.42	$2.65	75	$199	113	$298	113	$298
	C x C, 45 deg Ell,50mm	item	0.04	$6.26	8	$47	11	$70	11	$70
	Tee's C x C,15mm	item	1.00	$0.59	180	$106	270	$159	270	$159
	Tee's C x C,20mm	item	7.42	$1.41	1336	$1,883	2003	$2,825	2003	$2,825
	Tee's C x C,25mm	item	1.21	$5.22	218	$1,137	327	$1,705	327	$1,705
	Tee's C x C,30mm	item	1.00	$8.02	180	$1,444	270	$2,165	270	$2,165
	Tee's C x C,40mm	item	0.21	$10.14	37	$380	56	$570	56	$570
	C x M adapters,40mm	item	0.08	$7.63	15	$114	22	$172	22	$172
	Caps, C x C,20mm	item	1.50	$0.48	270	$130	405	$194	405	$194
	Copper pipe type M,15mm	m	10.88	$2.20	1958	$4,304	2938	$6,456	2938	$6,456
	Copper pipe type M,20mm	m	20.71	$3.54	3728	$13,205	5592	$19,808	5592	$19,808
	Copper pipe type M,25mm	m	2.67	$5.38	481	$2,585	721	$3,878	721	$3,878
	Copper pipe type M,30mm	m	1.25	$7.87	225	$1,771	338	$2,657	338	$2,657
	Copper pipe type M,40mm	m	0.50	$10.89	90	$980	135	$1,470	135	$1,470
	Valves R & W Toya C x C,40mm	item	0.21	$22.47	37	$843	56	$1,264	56	$1,264
	Insulated unions (EPCO),30mm	item	0.08	$17.60	15	$264	22	$396	22	$396
	Compression stops Emco, C x C,15mm	item	2.00	$2.64	360	$950	540	$1,426	540	$1,426
	Compression stops Emco, C x C,20mm	item	0.17	$3.79	30	$114	45	$171	45	$171
	Boiler drains, C x H,15mm	item	0.08	$2.40	15	$36	22	$54	22	$54

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT # WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
				QTY	$	QTY	$	QTY	$
None freeze wall hydrants,20mm	item	0.08	$13.77	15	$207	22	$310	22	$310
Suspension strap copper	19m	0.83	$8.63	150	$1,294	225	$1,942	225	$1,942
Solder 50 x 50	500g	2.30	$5.21	414	$2,157	621	$3,235	621	$3,235
Kester paste	500g	0.05	$4.51	9	$41	14	$61	14	$61
Domestic Hot and Cold water piping insulation fiber glass 25mm, c/w foil back, self seal,25mm	m	1.38	$4.94	248	$1,223	371	$1,834	371	$1,834
back, self seal,30mm	m	1.04	$5.05	188	$947	281	$1,420	281	$1,420
back, self seal,40mm	m	0.50	$5.64	90	$508	135	$761	135	$761
3M adhesive,416g	item	0.13	$8.69	23	$203	35	$305	35	$305
Automatic washer faucets, Waltec 29W521	item	0.08	$36.70	15	$550	22	$826	22	$826
Reducers ABS,150mm	item	0.08	$16.69	15	$250	22	$376	22	$376
Roof drains, M.J.,100mm	item	0.08	$77.15	15	$1,157	22	$1,736	22	$1,736
ABS, 45 ells,100mm	item	0.17	$33.34	30	$1,000	45	$1,500	45	$1,500
ABS, Y,150mm	item	0.08	$38.15	15	$572	22	$858	22	$858
ABS, 45 ells,100mm	item	0.17	$6.20	30	$186	45	$279	45	$279
ABS, C.O.,150mm	item	0.04	$12.64	8	$95	11	$142	11	$142
ABS Pipe,150mm	m	1.13	$21.65	203	$4,384	304	$6,576	304	$6,576
ABS couplings,150mm	item	0.17	$14.53	30	$436	45	$654	45	$654
Sheet lead,900x900mm	item	0.08	$62.32	15	$935	22	$1,402	22	$1,402
ABS solvent, cement,1.14L	item	1.00	$7.78	180	$1,400	270	$2,101	270	$2,101
Riser clamps,150mm	item	0.25	$6.43	45	$289	68	$434	68	$434
Clevis hangers,100mm	item	0.17	$1.81	30	$54	45	$81	45	$81
Lag rods,5x300mm	item	0.17	$1.50	30	$45	45	$68	45	$68
3/4" Bronze circulator, LR20AB	item	0.04	$226.65	8	$1,700	11	$2,550	11	$2,550
Steel lab bracket	item	0.04	$25.00	8	$188	11	$281	11	$281
C xM adapters,20mm	item	0.08	$1.39	15	$21	22	$31	22	$31
Red and white gates,20mm	item	0.08	$9.45	15	$142	22	$213	22	$213
Red and white check valve,20mm	item	0.04	$11.92	8	$89	11	$134	11	$134
C x C, 90's,20mm	item	0.25	$0.76	45	$34	68	$51	68	$51
C x C, Red. T,20mm	item	0.08	$1.41	15	$21	22	$32	22	$32
C x C Red. couplings,20mm	item	0.04	$1.39	8	$10	11	$16	11	$16
C x C, couplings,20mm	item	0.25	$0.48	45	$22	68	$32	68	$32
Closet flange c/w plate,100mm	item	0.25	$5.46	45	$246	68	$369	68	$369
P trap deep seal,100mm	item	0.04	$21.46	3	$161	11	$241	11	$241
Bushings,100x75mm	item	0.04	$3.23	8	$24	11	$36	11	$36
Tototec Smith floor drain,100mm	item	0.04	$42.69	8	$320	11	$480	11	$480
Brass floor access door,200x299mm	item	0.04	$38.33	8	$287	11	$431	11	$431
Pipe ABS,50mm	item	0.21	$4.13	37	$155	56	$232	56	$232
Pipe ABS,75mm	item	0.13	$7.87	23	$177	34	$266	34	$266
Pipe ABS,100mm	m	2.71	$12.10	487	$5,900	731	$8,850	731	$8,850
PVC test caps,100mm	item	0.25	$1.30	45	$59	68	$88	68	$88

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT # WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
				QTY	$	QTY	$	QTY	$
PVC test caps,75mm	item	0.33	$0.96	60	$58	90	$86	90	$86
PVC test caps,50mm	item	0.33	$0.71	60	$43	90	$64	90	$64
Bends JM, 1/4,1/8,1/6.1/16,50mm	item	1.00	$4.42	180	$796	270	$1,193	270	$1,193
Bends JM, 1/4,1/8,1/6.1/16,75mm	item	1.29	$6.20	233	$1,442	349	$2,162	349	$2,162
YS, TYS, Red. or Str.,50mm	item	0.50	$6.36	90	$572	135	$859	135	$859
YS, TYS, Red. or Str.,75mm	item	0.54	$9.65	98	$941	146	$1,411	146	$1,411
Tapped Y or TY,50mm	item	0.75	$10.35	135	$1,397	203	$2,096	203	$2,096
Tap side outlet,75x75x40m	item	0.83	$22.94	150	$3,441	225	$5,161	225	$5,161
Reducers,75m	item	0.50	$4.78	90	$430	135	$645	135	$645
Increasers,50x100mm	item	0.29	$12.10	53	$635	79	$953	79	$953
Cleanouts, Barret,50m	item	0.25	$25.46	45	$1 46	68	$1,719	68	$1,719
Cleanouts, Barret,75m	item	0.29	$31.37	53	$1,647	79	$2,470	79	$2,470
Deep seal trap,100x75mm	item	0.04	$41.06	8	$308	11	$462	11	$462
Barrett, C.O., M.J.,100mm	item	0.08	$43.37	15	$651	22	$976	22	$976
M.J. clamps,50mm	item	6.42	$3.11	1155	$3,592	1733	$5,388	1733	$5,388
M.J. clamps,75mm	item	5.46	$3.54	982	$3,478	1474	$5,217	1474	$5,217
M.J. clamps,100mm	item	1.00	$4.54	180	$817	270	$1,226	270	$1,226
M.J. clamps,150mm	item	0.08	$11.44	15	$172	22	$257	22	$257
M.J. 90 Ell's,100mm	item	0.17	$8.93	30	$268	45	$402	45	$402
Aluminum pipe,100mm	m	1.04	$18.66	188	$3,499	281	$5,248	281	$5,248
Aluminum adapter ring,50mm	item	6.08	$0.42	1095	$460	1642	$690	1642	$690
Aluminum adapter ring,75mm	item	5.13	$0.48	923	$443	1384	$664	1384	$664
Flat Hi boot alum. flashings,100mm	item	0.29	$14.09	53	$740	79	$1,110	79	$1,110
Lead stubs,100x75x300mm	item	0.75	$22.30	135	$3,011	203	$4,516	203	$4,516
Aluminum pipe (soil),50mm	m	2.75	$11.15	495	$5,519	743	$8,279	743	$8,279
Aluminum pipe (soil),75mm	m	2.38	$14.43	428	$6,169	641	$9,253	641	$9,253
Floor drain Roto Tech Smith,100mm	item	0.04	$42.69	8	$320	11	$480	11	$480
Clevis hangers,75 mm	item	0.25	$2.95	45	$133	68	$199	68	$199
Lag rods,3/8x6	item	0.25	$1.27	45	$57	68	$86	68	$86
Riser clamps,75mm	item	0.88	$3.11	158	$490	236	$735	236	$735
Perforated suspension strap,19mm	m	0.82	$1.02	148	$151	221	$226	221	$226
Couplings C x C,20mm	item	0.76	$0.48	137	$66	205	$98	205	$98
Couplings C x C,25mm	item	0.25	$1.31	45	$59	68	$88	68	$88
Couplings C x C,30mm	item	0.08	$2.30	15	$34	22	$52	22	$52
C x C couplings DWV,30mm	item	0.79	$1.48	142	$210	213	$316	213	$316
C x C couplings DWV,40mm	item	0.54	$2.02	98	$197	146	$295	146	$295
C x C couplings DWV,50mm	item	0.08	$2.79	15	$42	22	$63	22	$63
C x MIP adpt. DVW,30mm	item	0.25	$4.40	45	$198	68	$297	68	$297
C x MIP adpt. DVW,40mm	item	2.00	$5.14	360	$1,850	540	$2,776	540	$2,776
Line cleanout DWV,40mm	item	0.13	$14.22	23	$320	34	$480	34	$480
Line cleanout DWV,50mm	item	0.21	$22.61	37	$848	56	$1,272	56	$1,272
Double TY's,40mm	item	0.17	$15.31	30	$459	45	$689	45	$689
P traps brass c/w cleanout,40mm	item	0.75	$15.38	135	$2,076	203	$3,114	203	$3,114

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	P traps brass c/w cleanout,50mm	item	0.04	$29.11	6	$218	11	$327	11	$327
	Drum trap brass,40mm	item	0.25	$31.75	45	$1,429	68	$2,143	68	$2,143
	Copper pipe DWV,30mm	m	3.00	$7.51	540	$4,056	810	$6,084	810	$6,084
	Copper pipe DWV,40mm	m	3.13	$9.35	563	$5,256	844	$7,887	844	$7,887
	Copper pipe DWV,50mm	m	0.17	$12.30	30	$369	45	$554	45	$554
	Increasers,100mx30mm	item	0.21	$12.10	37	$454	56	$681	56	$681
	Plumber roll	item	0.13	$3.04	23	$68	34	$103	34	$103
	Copper suspension strap,15mm	m	0.42	$8.63	75	$647	113	$971	113	$971
	Black Malleable fittings, 90 or 45 Ells, 30	item	0.96	$1.73	172	$296	259	$448	259	$448
	Black Malleable fittings, 90 or 45 Ells, 50	item	0.63	$3.19	113	$359	169	$538	169	$538
	Tees, Str. or Red.,40mm	item	0.08	$3.39	15	$51	22	$76	22	$76
	Tees, Str. or Red.,50mm	item	0.50	$4.96	90	$446	135	$670	135	$670
	Unions,50mm	item	0.08	$6.16	15	$92	22	$139	22	$139
	Bushings,80mm	item	0.08	$5.90	15	$88	22	$133	22	$133
	Nipples,30mm	item	3.00	$0.82	540	$443	810	$664	810	$664
	Nipples,50mm	item	0.88	$1.29	158	$203	236	$305	236	$305
	Couplings, Black,30mm	item	2.08	$1.54	374	$577	562	$865	562	$865
	Couplings, Black,40mm	item	0.42	$2.00	76	$151	113	$227	113	$227
	Couplings, Black,50mm	item	0.33	$2.70	60	$162	90	$243	90	$243
	Pipe A53 continuous weld,30mm	m	3.00	$4.13	540	$2,232	810	$3,348	810	$3,348
	Pipe A53 continuous weld,40mm	m	0.33	$4.95	60	$297	90	$446	90	$446
	Pipe A53 continuous weld,40mm	m	2.08	$6.82	375	$2,558	562	$3,838	562	$3,838
	Cutting oil ridgid,4.6l	l	0.08	$9.05	15	$136	22	$204	22	$204
	Jet lube 60 lubricant,224ml	item	0.13	$9.10	23	$205	34	$307	34	$307
	Teflon tape,1/2x520"	item	0.17	$0.46	30	$14	45	$21	45	$21
	Angle iron,30x30x5mm	m	0.42	$2.39	75	$179	113	$269	113	$269
	All thread rod,5mm	m	0.29	$0.39	53	$20	79	$31	79	$31
	Hex nuts & washers & capscrews 5mm	item	1.25	$0.03	225	$7	338	$10	338	$10
21	HVAC									
21.7	BOILER									
	O A Smith HW460 460,000	item	0.04	$2,135.00	8	$16,013	11	$24,019	11	$24,019
	Pumps, 1/3HP, 15'head, 50 GPM, HD3,50mm	item	0.08	$334.33	15	$5,015	22	$7,522	22	$7,522
	Water make up valve, 1156F Watts,15mm	item	0.04	$31.43	8	$236	11	$354	11	$354
	Dual backflow preventer BF290,15mm	item	0.04	$45.11	8	$338	11	$507	11	$507
	Air eliminator,50mm	item	0.04	$55.11	8	$413	11	$620	11	$620
	Low water cut-off McDonnell,25mm	item	0.04	$167.72	8	$1,258	11	$1,887	11	$1,887
	Expension tank, 12 x 58,30PSI	item	0.04	$151.56	8	$1,137	11	$1,705	11	$1,705
	Gauge glass mountings,15mm	item	0.04	$19.05	8	$143	11	$214	11	$214
	Honeywell, indoor-outdoor controller T475A	item	0.04	$128.08	8	$961	11	$1,441	11	$1,441
	Mark Hot 10B baseboard heater	m	10.42	$13.97	1875	$26,194	2813	$39,291	2813	$39,291

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	Mark Hot 51x64mm element	m	8.42	$14.33	1515	$21,710	2273	$32,565	2273	$32,565
21.7	FURNACE									
	MF16 force flow	item	0.08	$325.15	15	$7,877	22	$11,816	22	$11,816
	Red and White, C x C gates,20mm	item	2.83	$9.45	510	$4,819	765	$7,229	765	$7,229
	Honeywell control valves, V8GAC-1033 union ends,20mm	item	1.00	$56.15	180	$10,107	270	$15,161	270	$15,161
	Danfoss valves c/w remote bulb,20mm	item	0.08	$80.65	15	$1,210	22	$1,815	22	$1,815
	Red and White gates Toya,50mm	item	0.17	$37.53	30	$1,126	45	$1,689	45	$1,689
	Red and White gates Toya,15mm	item	0.08	$7.55	15	$113	22	$170	22	$170
	Air vents maid-o-mist, No. 7	item	0.33	$28.06	60	$1,684	90	$2,525	90	$2,525
20.4	THERMOSTAT									
	Honeywell T6922C1124	item	1.00	$16.37	180	$2,947	270	$4,420	270	$4,420
	Transformers, ST72D1006	item	0.33	$15.38	60	$923	90	$1,384	90	$1,384
21.1	PIPE INSULATION									
	Fiber glass foil back,30mm	m	3.00	$5.06	540	$2,727	810	$4,091	810	$4,091
	Fiber glass foil back,40mm	m	3.00	$5.64	540	$3,046	810	$4,568	810	$4,568
	Fiber glass foil back,50mm	m	2.08	$6.69	375	$2,509	562	$3,763	562	$3,763
	3M adhesive spray,416g	item	0.08	$8.69	15	$130	22	$196	22	$196
21.1	GAS LINE TO MAKE UP FURNACE BOILER HW HEATER									
	Black malleable 90e,40mm	item	0.13	$2.27	23	$51	34	$77	34	$77
	Black malleable Tee's,40mm	item	0.08	$3.39	15	$51	22	$76	22	$76
	Black malleable 90e,30mm	item	0.13	$1.73	23	$39	34	$58	34	$58
	Gas Cocks,25mm	item	0.13	$9.86	23	$222	34	$333	34	$333
	Black mall tees,25mm	item	0.13	$1.77	23	$40	34	$60	34	$60
	Black mall caps,25mm	item	0.13	$0.79	23	$18	34	$27	34	$27
	Black mall unions,20mm	item	0.13	$1.87	23	$44	34	$66	34	$66
	SCH, 40 black nipples,20mm	item	0.50	$0.46	90	$41	135	$62	135	$62
	A53 cont. weld pipe,40mm	m	0.25	$4.95	45	$223	68	$334	68	$334
	A53 cont. weld pipe,30mm	m	0.04	$4.13	8	$31	11	$46	11	$46
	A53 cont. weld pipe,25mm	m	0.50	$3.15	90	$283	135	$425	135	$425
	Clevis hangers,40mm	item	0.25	$0.64	45	$29	68	$43	68	$43
	Lag rods,5mm	item	0.25	$1.50	45	$68	68	$101	68	$101
21.13	RANGE HOODS									
	Broan range hoods, series S200,30"	item	1.00	$64.15	180	$11,547	270	$17,321	270	$17,321
	Sheet metal boots, 100mmx250mm	item	1.00	$2.42	180	$436	270	$653	270	$653
	Galv. elbows,75mm	item	1.00	$1.23	180	$221	270	$332	270	$332
	Galv. pipe,75mm	m	23.00	$2.10	4140	$8,694	6210	$13,041	6210	$13,041
	Roof jacks,100x300mm	item	0.25	$10.50	45	$473	68	$709	68	$709

Table 2.11 (Continued)
Projected Quantities of Residential Building Products
Used in Walk-Up Apartment Construction for 1989-1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
	Duct tape, 50 meters,50mm	roll	0.04	$7.18	8	$54	11	$81	11	$81
	Sheet metal screws ,1/2x8	item	12.50	$0.02	2250	$43	3375	$64	3375	$64
21.13	BATHROOM EXHAUST FANS									
	Broan 675 bathfans	item	1.00	$36.40	180	$6,552	270	$9,828	270	$9,828
	Galv. elbows,75mm	item	3.00	$1.23	540	$664	810	$996	810	$996
	Galv. pipe,75mm	m	26.00	$2.10	4680	$9,828	7020	$14,742	7020	$14,742
	Roof jacks,100x300mm	item	0.25	$10.50	45	$473	68	$709	68	$709
	Duct tape,50x50mm	roll	0.04	$7.18	8	$54	11	$81	11	$81
	Sheet metal screws 1/2 x #8	item	12.50	$0.02	2250	$43	3375	$64	3375	$64
21.13	DRYER VENTS									
	Wall caps, c/w dampers,83x254mm	item	0.06	$4.20	15	$63	22	$94	22	$94
	Galv. 90 ells,100mm	item	0.33	$2.10	60	$126	90	$189	90	$189
	Galv. pipe, 28 gauge,100mm	m	0.71	$3.44	127	$439	191	$658	191	$658
21.1	INSULATION									
	Foil faced isulation,20x912mm	m	2.50	$4.56	450	$2,052	675	$3,077	675	$3,077
	Duct tape,50mm	rolls	0.25	$7.18	45	$323	68	$485	68	$485
	Screws, No. 8,12mm	item	4.17	$0.02	750	$14	1125	$21	1125	$21

Table 2.11 (Continued)
Projected Quantities Of Residential Building Products
Used In Walk Up Apartment Construction For 1989 -1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989 QTY	1989 $	1990 QTY	1990 $	1991 QTY	1991 $
22	ELECTRICAL									
22.1	EXTERIOR SERVICE									
	1600 MCMbiLink Copper Wire	m	1.50	$16.20	270	$4,374	405	$6,561	405	$6,561
22.2	CONDUIT									
	Plastic Conduit 150mm diameter	m	2.91	$59.64	524	$31,239	786	$46,859	786	$46,859
	Plastic Conduit 20mm diameter	m	2.28	$3.17	410	$1,301	616	$1,951	616	$1,951
	Plastic 90deg. Elbow 150mm dia.	item	0.06	$4.25	14	$61	22	$92	22	$92
	60 Amp Double Pole Main Breaker	item	1.00	$42.50	180	$7,650	270	$11,475	270	$11,475
	100 Amp Double Pole Main Breaker	item	0.08	$89.00	14	$1,282	22	$1,922	22	24030
22.3	MAIN SWITCH & BREAKER BOX									
	400 amp main panel with fuse switch	item	0.04	$3,402.00	8	$25,515	11	$38,273	11	918840
	60 amp 16 circuit panel in each apartment	item	1.00	$141.67	180	$25,500	270	$38,250	270	38250
	#6 Bare copper wire	100m	0.06	$160.70	11	$1,736	16	$2,603	16	43389
	Screws #8 x 25mm	100	0.10	$3.83	18	$69	27	$103	27	1034
22.4	ELEC. CIRCUIT BREAKERS									
	15 amp Single pole breakers	item	5.00	$4.68	900	$4,302	1350	$6,586	1350	$6,586
	15 amp Double pole breakers	item	2.00	$10.77	360	$3,877	540	$5,816	540	$5,816
	15 amp Ground fault breakers	item	2.00	$53.50	360	$19,260	540	$28,890	540	$28,890
	40 amp Double pole breakers	item	1.00	$42.50	180	$7,650	270	$11,475	270	$11,475
	30 amp Double pole breakers	item	1.00	$42.50	180	$7,650	270	$11,475	270	$11,475
22.5	INSULATED WIRE									
	#12 X-Line Copper Wire	km	0.03	$850.00	6	$3,846	7	$5,829	7	$5,829
	9.5mm Flex	km	0.01	$3,154.00	1	$4,326	2	$6,489	2	$6,489
	12.7mm Cable Straps	100	0.60	$22.08	108	$2,381	162	$3,572	162	$3,572
	25.4mm Cable Straps	100	0.07	$45.15	13	$568	19	$853	19	$853
	Range Cable Connector	100	0.04	$105.10	7	$757	11	$1,135	11	$1,135
	9.5mm Flex Connectors	100	0.00	$37.95	0	$17	1	$26	1	$26
	Marr Connectors	item	68.00	$0.40	12240	$4,896	18360	$7,344	18360	$7,344
	2-14 Insulated Copper Wire	km	0.19	$1,186.00	34	$40,630	51	$60,944	51	$60,944
	3-14 Insulated Copper Wire	km	0.05	$1,991.00	8	$16,485	12	$24,728	12	$24,728
	3-6 Insulated Copper Wire	km	0.02	$10,797.00	4	$46,643	6	$69,965	6	$69,965
	3-10 Insulated Copper Wire	km	0.01	$4,198.00	1	$4,656	2	$6,988	2	$6,988

Table 2.11 (Continued)
Projected Quantities Of Residential Building Products
Used In Walk Up Apartment Construction For 1989 -1991

CAT #	WALK UP APARTMENT BUILDING	UNIT	QTY/APT	$/UNIT	1989		1990		1991	
					QTY	$	QTY	$	QTY	$
	JUNCTION & OUTLET BOXES									
	1104 Switch Boxes	100	0.24	$161.80	43	$6,990	65	$10,485	65	$10,485
	100mm Octagon Boxes	100	0.10	$205.85	17	$3,504	26	$5,391	26	$5,391
	100mm Deep Square Boxes	100	0.02	$377.85	4	$1,530	6	$2,295	6	$2,295
	Duplex Plugs 110V	100	0.16	$92.75	29	$2,671	43	$4,007	43	$4,007
	Duplex Plug Cover Plates	100	0.15	$29.75	27	$803	41	$1,205	41	$1,205
	Water Proof Plug Covers	100	0.01	$201.25	2	$362	3	$543	3	$543
	40A/220V Plub	100	0.01	$472.50	2	$851	3	$1,276	3	$1,276
22.7	**SWITCHES**									
	Single Pole Switches 110V	100	0.08	$127.75	14	$1,840	22	$2,759	22	$2,759
	2 Gang Switch Plates	100	0.01	$59.50	2	$107	3	$161	3	$161
	Single Switch Plates	100	0.06	$29.75	11	$321	16	$482	16	$482
22.8	**LIGHT FIXTURES**									
	Emergency Lights Double Head	Item	0.58	$103.36	104	$10,791	157	$16,186	157	$16,186
	Bedroom	Item	1.5	$15.00	270	$4,050	405	$6,075	405	$6,075
	Kitchen	Item	1	$100.00	180	$18,000	270	$27,000	270	$27,000
	Bathroom	Item	1	$50.00	180	$9,000	270	$13,500	270	$13,500
	Exterior	Item	0.08	$35.00	14	$504	22	$756	22	$756
	Utility	Item	0.08	$10.00	14	$144	22	$216	22	$216
22.1	**TELEPHONE PLATE**	Item	1.00	$0.80	180	$144	270	$216	270	$216
22.16	**SECURITY SYSTEMS**									
	Fire Alarm Bells	Item	0.50	$36.30	90	$3,267	135	$4,901	135	$4,901
	Pull Station	Item	0.50	$20.90	90	$1,881	135	$2,822	135	$2,822
	Exit Lights	Item	0.33	$26.34	59	$1,565	89	$2,347	89	$2,347
	8 Circuit Annunciator	Item	0.04	$1,290.00	7	$9,288	11	$13,932	11	$13,932

3.0 ALBERTA MANUFACTURERS

3.1 Survey of Manufacturers

3.1.1 Questionnaire Design and Pretest

The 1989 questionnaire was based on the one used in the 1985 study. Once the limitations in the earlier survey had been identified, the revised questionnaire was thoroughly reviewed by the consultant and the client. The completed questionnaires indicate that the survey was well constructed and very few problems with its completion were observed.

3.1.2 Manufacturers List

The 1989 manufacturers list was an updated and augmented version of the one used in 1985. In addition to the earlier list, the following indexes were referred to and, where appropriate, merged to form the new master index:

1. Alberta, Economic Development and Trade, Alberta Manufacturers' Index, Alberta, 1989;

2. Alberta, Public Works, Supply and Services, Alberta Construction Product Manufacturers' Index, Alberta, January 1989;

3. Bamsy, C. R., Timber Management Branch, Alberta Forest Service, Directory of Primary Wood-Using Industries in Alberta - 1986, Alberta, May 1987;

4. Canadian Forestry Service and Alberta Department of Forestry, Lands & Wildlife, Directory of Secondary Wood-Using Industries in Alberta - 1986, Alberta, March 1987.

Most of the manufacturers and processors identified in the 1985 study were included in the list. Excluded from the list were the smaller seasonal lumber operations which operated for only a couple of months

a year. Seven hundred and thirty businesses were identified as potential manufacturers or processors of residential building products.

3.1.3 Mailing of Questionnaires

On June 20, 1989, 730 questionnaires (see Appendix A) were mailed to the identified manufacturers. Each questionnaire was accompanied by a covering letter from the Assistant Deputy Minister of Municipal Affairs requesting the manufacturer's cooperation. The letter described the nature of the project and its ultimate purpose, and ensured confidentiality of questionnaire replies. Information and phone contacts were provided concerning the design and clarification of the questionnaire. A response within two weeks of receipt was requested. A self-addressed, stamped envelope was sent with the questionnaire to encourage response.

3.1.4 Follow-up Phone Calls to Non-Respondents

During the second week of August, follow-up phone calls were made to businesses that had not replied to the questionnaire. At this time additional surveys were sent out if the original questionnaire had not reached the appropriate person and reminders were sent to those who had not returned the survey. This process was repeated again three weeks later, resulting in the following response breakdown:

Completions by applicable companies:	121
Do not manufacture residential building products:	211
Out of business/could not be reached:	164
Non-response/refusals:	234
Total	730

While a number of the "non-response/refusal" category companies may not manufacture products used in wood frame construction, it is evident that the refusal rate was high for a census. Two reasons for this have been identified. The first is the time of year. During the summer months companies within the construction industry are at their busiest; at the same time employees are taking their vacations. Both of these

factors mean little time is available to complete questionnaires. Furthermore, it became apparent from our contact with the companies that there were a number of other surveys being completed at the same time. This led to frustration within the survey population and appeared to have a substantial impact on completion rates.

Table 3.1 presents the product categories along with the number of respondents within each category. In addition, where available, the number of "establishments" surveyed in the Statistics Canada 1986 Wood Industries Report is presented. While the structure of the Statistics Canada information is different, it does provide an idea of the representativeness of the survey data. It should, however, be noted that the information is three years out-of-date and Statistics Canada uses establishments while this study uses companies. It is known that a number of the surveyed companies operated a number of establishments or plants.

3.1.5 Processing of Survey Results

Once all the questionnaires had been edited and all volume figures converted to consistent metric units of measure, the data were coded and entered into dBase IV for analysis.

3.1.6 Analysis of Results

An analysis of all findings was undertaken. Results from frequency distributions and cross-tabulations, used to provide additional insight, were summarized.

The analysis provides the following types of information:

- products produced in Alberta;
- value of products produced;
- level of capacity, and capacity at which plants are operating;
- nature and source of raw materials;
- availability of raw materials in Alberta;
- customers of producers;

Table 3.1

Number of Companies Responding in Each Industry

Category Number	Product Category	Material	No. of Completed Surveys	Statistics Canada Number of Establishments
1.0	foundations	cement	1	
		concrete	5	
		sand & gravel	4	
		curing compound	1	
		Chem Bond	1	
		reinforcing steel	1	
		welded wire mesh	1	
		steelform corners	1	
		cu-all blocks	1	
2.0	weeping tile/ dampproofing	asphaltic foundation coating	1	
4.0	entry steps	precast concrete steps	3	
		metal/iron steps	1	
		iron railings	5	
5.0	rough framing	dimension lumber	25	38
		sheathing material - plywood	2	28
		- polyurethane sandwich panel	1	
		premanufactured wood trusses	5	
		web stock	1	
		wooden stairs	4	
		spiral stair kits	1	
		acrylic staircases	1	
6.0	roofing	asphalt roofing products	2	
		asphalt roof cement	1	
		asphalt felt	1	
		metal roof panels	1	
		concrete roof tile	1	
		copper roofing	1	
		flashing	1	
		skylight flashing	1	
		eavestroughs/ down spouts	1	

Table 3.1 (continued)

Number of Companies Responding in Each Industry

Category Number	Product Category	Material	No. of Completed Surveys	Statistics Canada Number of Establishments
7.0	windows	aluminum	6	window (metal) 3
		fiberglass	1	
		vinyl	2	
		wood	6	9
		skylights		
		- acrylic	1	
		- aluminum	1	
		- vinyl	1	
		- wood	1	
		wood/plastic grill	1	
		window sealant	1	
		insulated glass	1	all glass 12
		custom windows	1	
		louvers/shutters	1	
8.0	insulation & vapour barriers	fiberboard insulation	1	
		polyethylene film	1	
		fiberglass batt insulation	1	2
		poly-insulation	1	
9.0	exterior finishes	wood siding	1	See lumber.
		concrete masonry	3	
		clayface bricks	1	
		trowel-ready mortar	1	
10.0	exterior doors & frames	exterior doors (general)	6	doors (wood) 6
		- wood door (prehung)	1	doors (metal) 6
		- composite doors	1	
		- steel doors	1	
		wood & aluminum patio doors	1	
		garage doors		
11.0	interior wall/ceiling	versaboard (drywall adhesive)	1	
		vinyl baseboard	1	
		drywall trims	1	
		wall panelling	1	

Table 3.1 (continued)

Number of Companies Responding in Each Industry

Category Number	Product Category	Material	No. of Completed Surveys	Statistics Canada Number of Establishments
12.0	flooring	pine flooring	1	
14.0	millwork	doors and frames	6	all doors (wood) 6
		moulding/trim	2	1
		kitchen cabinets	13	
		vanities	5	
		vanity/countertops	4	
		cabinet doors	1	3
		mirrored doors	1	
		wood and millwork	2	
		fireplace mattes	1	
		hardwood lumber	1	
16.0	bathroom accessories	marble panelling	1	
		plastic tub enclosures	2	
		medicine cabinets	1	
17.0	miscellaneous items	window guards		
		burglar alarm bar	1	
		burglar alarm screen	1	
		shutters	1	
		clay flue lining	2	
		built-in vacuum systems	1	
		central vacuum fittings	1	
		garbage chutes	1	
		awnings	2	
20.0	plumbing	polyethylene water pipes	1	
		marble tubs	2	
		bath tubs	1	
		shower bases	1	
		concrete septic tanks	3	
21.0	heating and ventilation	sheet metal ductwork	2	
		fireplace heatilator	1	
		chimney dampers	1	
22.0	electrical	oak wraplighting	1	

- market area for products;
- perceived competition within various product markets;
- future production plans, with regard to both present and future products;
- employment provided by industries;
- how long companies have been operating and if new companies are starting up.

The information provided by the survey was supplemented by information from Statistics Canada and Alberta Economic Development and Trade. This information, although not complete or always up-to-date, provides some data on the import and export of products to and from Canada. Statistics Canada also provides additional information on the wood products industry which is used for comparative purposes.

3.2 Data Limitation

The survey was to have been a complete survey or census of all manufacturers of wood frame residential building products. The high refusal and non-response rates, however, made reaching the goal an impossibility. Although the final count of completed surveys was about 120, which represents a high proportion of the population, the sample cannot always be considered representative. Despite this, the surveys do provide a considerable amount of useful information.

Another problem that would have existed even if a complete census had been possible is that manufacturers do not always make a distinction between their product as it applies to wood frame residential construction and other uses. This evidently introduces a level of inaccuracy.

Not all the manufacturers answered all the questions. This may have been because they did not know the answers or did not keep such information or that the information was considered confidential. While

this information could be estimated on the basis of industry averages and the answers to other questions, not all data gaps could be filled.

3.3 Identification of Manufacturers

Of the 120 surveys returned by manufacturers of products used in wood frame residential construction, 57% were from companies located in or north of Red Deer. Almost 27% were from Edmonton and about 31% from other northerly cities and towns. Fewer respondents were located in the southerly region of the province; 21% were located in Calgary and 22% in other towns and cities of the region.

Table 3.2 presents the volumes of products produced by the respondent manufacturers by category, along with their maximum capacity, percent of capacity they are operating at, and the total dollar value of the products manufactured (FOB the plant). Information not complete on surveys was estimated where possible. In cases where the information was incomplete and could not be estimated, all information on that company was omitted from the table to avoid confusion.

Table 3.3 presents the most recent Statistics Canada data on production within the "wood product industry." Not all products used in wood frame residential construction are covered in this table, as Statistics Canada does not break down the production of all products by province. It should be noted that the information presented cannot be viewed as consistent with that of the study. Firstly, Statistics Canada makes no distinction with regard to the use of the product, i.e., residential wood frame construction. Secondly, the data in at least three years is out-of-date; one can see by comparing 1985 and 1986 figures how dramatically the industry changes over a one-year period. Finally, the categories used by Statistics Canada are different from the ones used in the study and are, consequently, not fully comparable.

By comparing the two-year information, one can see the volatility within the industry. There are 21 fewer companies referenced in the 1986 figures than were for 1985. Large variants in "cost" are also

Table 3.2

Residential Building Products: Volumes Produced,

Capacity and Dollar Value for 1988

Category Number	Product Category	Material	Total Product of Reporting Companies '88	Total Maximum Production of Reporting Companies '88	% Capacity of Reporting Companies	*Total Value of Production for Reporting Cos.
1.0	foundations	cement	400,000 tonnes	700,000 tonnes	57.14%	$20,000,000
		concrete	106,415 m^3	591,665 m^3	18.0%	$ 9,445,130
		sand & gravel	25,604 m	--	--	$ 190,668
		curing compound	35,000 l	175,000 l	20.0%	$ 35,000
		ChemBond	--	--	--	--
		reinforcing steel	6,000 tonnes	10,000 tonnes	60.0%	$ 3,500,000
		welded wire mesh	--	--	--	--
		steelform	--	--	--	--
		corners	1,000 sets	--	--	$ 36,000
		concrete sealers	44,600 l	750,000 l	5.95%	$ 137,000
		cu-all blocks	200,000 blocks	700,000 blocks	28.6%	--
2.0	weepingtile/ dampproofing	asphalic foundation coating	95,000 l	500,000 l	19.0%	$ 123,500
4.0	entry steps	precast concrete steps	2,730 units	3,100 units	88.1%	$ 45,000
		metal/iron steps	4 units	--	--	$ 3,000
		iron railings	1,840 units	3,000 units	61.3%	$ 49,576

* When information is not complete for a company, information is estimated on the basis of industry averages and available information.

Table 3.2 (continued)

Residential Building Products: Volumes Produced,

Capacity and Dollar Value for 1988

Category Number	Product Category	Material	Total Product of Reporting Companies '88	Total Maximum Production of Reporting Companies '88	% Capacity of Reporting Companies	Total Value of Production for Reporting Cos.
5.0	rough framing	dimension lumber	2,102,758 m^3	2,282,966 m^3	92.1%	$96,261,060
		sheathing material - plywood	1,197,791	--	--	$43,455,000
		- polyurethane sandwich panel	167,220 m^2	1,486,400 m^2	11.25%	--
		premanufactured wood trusses	246,000 units	326,000 units	75.5%	$ 8,512,080
		web stock	28,318 m^3	35,397 m^3	80.0%	--
		wooden stairs	401,100 units	617,000 units	65.0%	$ 4,125,000
		spiral stair kits	10 units	--	--	$ 12,000
		acrylic staircases	3 units	100 units	3.0%	--
6.0	roofing	asphalt roofing products	14,864,000 m^2	27,870,000 m^3	53.3%	$30,000,000
		asphalt roof cement	151,000 l	500,000 l	30.2%	$ 163,080
		asphalt felt	--	--	--	$ 100,000
		metal roof panels	--	10,000 m^2	--	--
		concrete roof tile	--	--	--	--
		copper roofing	5 units	400 units	1.25%	$ 5,000
		flashing	1,000 units	--	--	$ 100,000
		skylight flashing	390 units	10,000 units	3.90%	$ 3,000

Table 3.2 (continued)

Residential Building Products: Volumes Produced,

Capacity and Dollar Value for 1988

Category Number	Product Category	Material	Total Product of Reporting Companies '88	Total Maximum Production of Reporting Companies '88	% Capacity of Reporting Companies	Total Value of Production for Reporting Cos.
6.0	roofing	eavestroughs/ down spouts	106,680 m	--	--	$ 200,000
7.0	windows	aluminum	28,100 units	72,500 units	38.7%	$ 3,962,000
		fiberglass	20,000 units	43,000 units	46.5%	$ 350,000
		vinyl	11,200 units	24,000 units	46.6%	
		wood	84,499 units	136,675 units	61.2%	$12,680,000
		skylights	143,799 units	276,175 units	52.1%	$18,892,000
		- acrylic	400 units	1,000 units	40%	--
		- aluminum	--	--	--	$ 80,000
		- vinyl	--	--	--	$ 500,000
		- wood	--	--	--	$ 10,000
		wood/plastic grille	18,874 pcs	30,000 pcs	62.91%	$ 335,420
		window sealant	24,154 m^2	46,450 m^2	52%	$ 800,000
		insulated glass	14,000 units	27,500 units	51%	$ 800,000
		custom windows	1,827 pcs	3,600 pcs	50.75%	$ 435,640
		louvers/shutters	465 pcs	800 pcs	58.13%	$ 31,699
8.0	insulation and vapour barriers	polyethylene film	907,200 kg	1,360,800 kg	66.67%	$ 2,000,000
		insulation				
		- fiberboard	5,574,000 m^2	6,967,500 m^2	80.0%	$ 6,000,000
		- fiberglass batt	20,000 tonnes	20,000 tonnes	100%	$30,000,000
		- polyurethane	167,220 m^2	1,486,400 m^2	11.25%	--

Table 3.2 (continued)

Residential Building Products: Volumes Produced,

Capacity and Dollar Value for 1988

Category Number	Product Category	Material	Total Product of Reporting Companies '88	Total Maximum Production of Reporting Companies '88	% Capacity of Reporting Companies	Total Value of Production for Reporting Cos.
8.0	insulation and vapour barrier	- expanded polystyrene (various types)	27,870 m^2	--	--	$ 300,000
		- insulfit (new product)	--	--	--	--
		- basewrap (new product)	--	--	--	--
9.0	exterior finishes	wood siding	142 m^3	142 m^3	100%	$ 24,000
		concrete masonry	4,070,000 units	65,000,000 units	6%	$ 5,621,800
		clayface brick	40,000,000 units	90,000,000 units	44%	$10,000,000
		trowel-ready mortar	1911.5 m^3	3,823 m^3	50%	$ 375,000
10.0	exterior doors and frames	exterior doors	12,670 units	18,054 units	70.2%	$ 7,525,000
		- wood door (prehung)	200 units	350 units	57.14%	--
		composite doors	250 units	100,000 units	2.5%	$ 75,000
		steel doors	600 units	12,000 units	50%	--
		wood & aluminum patio doors	5,000 units	15,000 units	33.3%	$ 2,000,000
		garage doors	1,200 units	--	--	--
11.0	interior wall/ceiling	versaboard (drywall adhesive)	--	--	--	--
		vinyl baseboard	289,560 m	914,400 m	31.7%	$ 550,000

Table 3.2 (continued)

Residential Building Products: Volumes Produced, Capacity and Dollar Value for 1988

Category Number	Product Category	Material	Total Product of Reporting Companies '88	Total Maximum Production of Reporting Companies '88	% Capacity of Reporting Companies	Total Value of Production for Reporting Cos.
11.0	interior wall/ceiling	drywall trim	2,438,400 m	10,972,800 m	22.2%	$ 600,000
		wall panelling	1,858 m^2	4,645 m^2	40%	$ 150,000
12.0	flooring	pine flooring	47 m^3	47 m^3	100%	$ 9,000
14.0	millwork	doors & frames	45,693 units	66,978 units	69.6%	$ 255,010
		moulding/trim	609,600 m	1,219,200 m	50.0%	$ 2,000,000
		kitchen cabinets	--	--	--	--
		vanities	--	--	--	--
		vanity/countertops	--	--	--	--
		cabinet doors	2,000	4,000	50%	$ 500,000
		mirrored doors	1,176 units	1,500 units	78%	$ 175,423
		wood and millwork	--	--	--	--
		fireplace mattes	25 units	500 units	5%	$ 3,750
		hardwood lumber	103 m^3	189 m^3	54.5%	$ 218,693
16.0	bathroom accessories	marble panelling	--	--	--	--
		plastic tub enclosures	--	--	--	--
		medicine cabinets	--	--	--	--

Table 3.2 (continued)

Residential Building Products: Volumes Produced, Capacity and Dollar Value for 1988

Category Number	Product Category	Material	Total Product of Reporting Companies '88	Total Maximum Production of Reporting Companies '88	% Capacity of Reporting Companies	Total Value of Production for Reporting Cos.
17.0	miscellaneous items	window guards	20 units	100 units	20%	$ 400
		burglar alarm bars	4,000 units	240,000 units	1.67%	$ 160,000
		burglar alarm screen	2,000 units	10,000 units	20%	$ 120,000
		shutters	1,700 units	20,000 units	8.5%	$ 500,000
		clay fire brick	100,000 bricks	1,000,000 bricks	10%	$ 500,000
		clay flue lining	100,000 flues	1,000,000 flues	10%	$ 250,000
		built-in vacuum system	4,000 units	11,000 units	36.36%	$ 160,000
		central vacuum fittings	4,000 units	21,000 units	19.05%	--
		garbage chutes	50 units	100 units	50.0%	$ 20,000
		awnings	150 units	600 units	25%	$ 375,000
		aluminum awning	1600 m^2	10,000 m^2	16%	$ 100,000
20.0	plumbing	polyethylene water pipes	36,576 m	640,080 m	20%	$ 110,000
		marble tubs	1,360 units	1,700 units	80%	$ 112,000
		bath tubs	300 units	750 units	40%	$ 200,000
		shower bases	100 units	250 units	40%	$ 30,000
		concrete septic tanks	3,270 units	--	--	$ 936,400

Table 3.2 (continued)

Residential Building Products: Volumes Produced,

Capacity and Dollar Value for 1988

Category Number	Product Category	Material	Total Product of Reporting Companies '88	Total Maximum Production of Reporting Companies '88	% Capacity of Reporting Companies	Total Value of Production for Reporting Cos.
21.0	heating and ventilation	sheet metal ductwork	99,792 kg	581,440 kg	17.2%	$ 460,000
		fireplace heatilators	10 units	50 units	20%	$ 3,030
		chimney dampers	10 units	75 units	13.33%	$ 700
22.0	electrical	oak wrap lighting	275 units	400 units	68.75%	--

Table 3.3

Statistics Canada Wood Industry Production

and Establishment Estimates for Alberta

Product	1985		1986	
	Estab-lishments	Produce ($000's)	Estab-lishments	Produce ($000's)
Lumber and sawn timber	46	24,931	42	40,110
soft wood	43	21,764	38	23,542
hard wood	14	3,167	16	16,568
Shakes and shingles	--	--	1	--
Windows and dash, door and window frames, wooden	9	1,992	9	2,854
Moulding, wooden, construction	--	--	1	x
Kitchen units or cabinets	4	x	4	2,247
Millwork	5	x	4	x
Plywood	30	6,966	28	5,672
Building paper, coated or impregnated	4	1,436	4	1,275
Adhesives	20	2,395	19	1,748
High pressure laminated plastic sheets	9	704	7	816
Paints and paint products	17	433	13	425
Doors metal	11	637	8	583
Windows and window frames, metal	3	113	3	163
Roof truss plates metal	3	398	4	883
Basic hardware	37	3,259	34	3,072
Glass sheet, float and plate	14	1,279	12	1,445
Gypsum wallboard	4	x	2	x

Table 3.3 (continued)

Statistics Canada Wood Industry Production

and Establishment Estimates for Alberta

	1985		1986	
	Estab-lishments	Produce ($000's)	Estab-lishments	Produce ($000's)
Mineral wool (incl. fibrous glass insulation	2	x	2	x
Heating, air conditioning and refrigeration equipment	1	x	2	x
Plumbing equipment and fittings (excl. valves, piles and fittings)	2	x	3	1,307
Electric lighting, distribution and control equipment	1	x	1	x
Total	237		216	

x - indicates suppressed information.

Source: 1986 Wood Industries, Statistics Canada, May '89

evident from year to year. For example, the production of hardwood lumber increased by over 500%, and metal roof trussplates production doubled. While there are fewer companies referenced in the 1986 column, production in all but a few industries appears to have increased.

Table 3.4 lists all the companies that participated in the survey. They have been listed according to the categories of products they produce. Therefore, a firm may appear more than once if it produces a number of products. Where a product, such as nails, can be classified under a number of categories, it has been classified in the category where it would be used the most.

3.4 Analysis of Manufacturers' Survey Results

This section of the report will present an interpretation of the survey data and provide insight into the wood frame residential building product market.

3.4.1 Percent of Capacity

The health or well-being of an industry is often examined by looking at at what percent of its maximum capacity it is operating. The column "Percent capacity of reporting companies" in Table 3.2 presents the level of capacity at which the reporting companies in each industry were operating. While the vast majority of industries are operating at well below capacity, the average for all industries is about 41%, up from 1984 when the average was approximately 34%. As was the case in 1984, insulation and exterior door manufacturers continue to operate closer to capacity than most other industries. Other industries which appear to be operating closer to capacity are dimension lumber (92%) and precast concrete steps (88%). While other industries indicate that they are operating closer to capacity, there were fewer reporting companies within these industries.

Table 3.4

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Sand and gravel	Foundations concrete	1.1	Tru Mix Concrete P.O. Box 176 Bonnyville, Alta TOA OLO
Washed rock		1.1	Pidherney Transit Mix 4907-43 Street Rocky Mtn. House, Alta. TOM 1TO
Fill sand		1.1	Pidnerney Transit Mix 4907-43 Street Rocky Mtn. House, Alta. TOM 1TO
Crushed gravel		1.1	Pidherney Transit Mix 4907-43 Street Rocky Mtn. House, Alta. TOM 1TO
Cement		1.1	Inland Cement Limited 12640-156 Street Edmonton, Alta. T5V 1K2
Ready-mix concrete		1.1	Tru Mix Concrete P.O. Box 176 Bonnyville, Alta. TOA OLO Revelstoke Concrete Inc. P.O. Box 2568, Stn. M Calgary, Alta. T2P 4C5 Raffin Transit Mix Ltd. P.O. Box 117 1304-26 Avenue Nanton, Alta. TOL 1RO

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Ready-mix concrete			Pidherney Transit Mix 4907-43 Street Rocky Mtn. House, Alta. T0M 1T0
			Assinger Concrete Ltd. P.O. Box 12 Stony Plain, Alta. T0E 2G0
Concrete curing compound		1.1	Conchem P.O. Box 635 Nisku, Alta. T0C 2G0
Chembond		1.1	Chemtron Manufacturing Ltd. 6201 Centre St. South Calgary, Alta. T2H 0C7
Welded wire mesh		1.1	A & H Steel Ltd. 4710-82 Avenue Edmonton, Alta. T6B 0E4
Reinforced steel		1.1	A & H Steel Ltd. 4710-82 Avenue Edmonton, Alta. T6B 0E4
Synthetic fibre reinforcement		1.1	Conchem P.O. Box 635 Nisku, Alta. T0C 2G0
Steel forms		1.1	Metal Fabricators & Welding 12509-124 Street Edmonton, Alta. T5L 0N6

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Concrete sealing compound		1.1	Conchem P.O. Box 635 Nisku, Alta. T0C 2G0
Concrete sealers		1.1	Elsro Construction Products 38A Rayborn Crescent St. Albert, Alta. T8N 3C7
Prefab basement wall panels	Foundations preserved wood	1.2	Nascor Incorporated 7803-35 Street S.E. Calgary, Alta. T2C 1V3
Basement wall panels		1.2	Nascor Incorporated 7803-35 Street S.E. Calgary, Alta. T2C 1V3
Pressure-treated wood		1.2	Lief Johnson Box 863 Sundre, Alta. T0M 1X0
Cu-all blocks	Foundations unit masonry	1.3	BTU Panels Ltd. 53323 Range Road 232 Sherwood Park, Alta. T8A 4V2
Asphaltic foundation coating	Weeping tile/ dampproofing	2.0	Elsro Construction Products 38A Rayborn Crescent St. Albert, Alta. T8N 3C7
Steps (various materials)		4.0	Tri-Hard Concrete Products P.O. Box 547 St. Paul, Alta. T0A 3A0

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Materia`/item	Product category used in	Category number	Manufacturer
Precast concrete steps		4.1	N & N Concrete Ltd. Box 450 McLennan, Alta. T0H 2L0
			P. Kruger Concrete Products 2501 Aryth Road S.E. Calgary, Alta. T2G 1P7
Metal stairs	Entry steps	4.3	Lonnal Welding and Manufacturing Ltd. P.O. Box 23 Bashaw, Alta. T0B 0H0
Railing/steps, iron		4.3	South Side Ornamental Iron Works Co. Ltd. 7351-104 Street Edmonton, Alta. T6E 4B9
Railings/steps, steel		4.3	Coaldale Iron Products Ltd. P.O. Box 2, 1209-18 Ave. Coaldale, Alta. T0K 0L0
Metal railings		4.3	Lonnal Welding and Manufacturing Ltd. P.O. Box 23 Bashaw, Alta. T0B 0H0
			SMF Special Metals Fabricating Ltd. 14631-119 Avenue Edmonton, Alta. T5L 2N9

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Ornamental metal		4.3	Lonnal Welding and Manufacturing Ltd. P.O. Box 23 Beshaw, Alta. TOB OHO
Dimension lumber	Rough framing	5.1	Crestview Sawmills Ltd. Box 208 La Crete, Alta. TOH 2HO Arthur Hough Box 161 Breton, Alta. TOC OPO Millar Western Industries Ltd. 5004-52 Street Whitecourt, Alta. TOE 2LO Sundance Forest Industries Ltd. P.O. Box 1600 Edson, Alta. TOE OPO Northern Forest Industries Ltd. P.O. Box 1888 Lac La Biche, Alta. TOA 2CO Buchanan Lumber P.O. Box 38 High Prairie, Alta. TOG 1EO

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Dimension lumber		5.1	Blue Ridge Lumber (1981) Ltd. P.O. Box 1079 Whitecourt, Alta. T0E 2L0
			Medicine Lodge Timber Products Box 7132 Edson, Alta. T0E 0P0
			Rocky Wood Preservers Ltd. P.O. Box 1537 Rocky Mtn. House, Alta. T0M 1T0
			Rinke & Sons Box 143 Blairmore, Alta. T0K 0E0
			Bissel Bros. Lumber Ltd. Box 60, General Delivery Enilda, Alta. T0G 0W0
			Flemming, Robers & August Stauffer Box 26 Ft. Assiniboine, Alta. T0G 1A0
			Northland Forest Products Ltd. P.O. Box 5306 Ft. McMurray, Alta. T9H 3G4
			Canadian Forest Products Postal Bag 100 Grande Prairie, Alta. T8V 3A3

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Dimension lumber		5.1	Taron Enterprises Ltd. General Delivery Desmarais, Alta. T0G 0T0
			Lodgepole Ranch Ltd. R.R.#2 Rocky Mtn. House, Alta. T0M 1T0
			Natal Forest Products Box 149 Coleman, Alta. T0K 0M0
			Niemi Lumber Box 103 Valleyview, Alta. T0H 3N0
			Everett Miller Box 121 Alder Flats, Alta. T0C 0A0
			Lund Lumber Box 300 Sundre, Alta. T0M 1X0
			Zavisha Sawmills Ltd. P.O. Box 60 Hines Creek, Alta. T0H 2A0
			Leif Johnson Box 863 Sundre, Alta. T0M 1X0

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Dimension lumber		5.1	Sunchild Forest Products P.O. Box 68 Winterburn, Alta. T0E 2N0
			V. & O. Lumber Box 1707 Rocky Mtn. House, Alta. T0M 1T0
			K & K Holdings Ltd. Box 1743 Lac La Biche, Alta. T0A 2C0
			Zeidler Forest Industries Ltd. P.O. Box 4370 Edmonton, Alta. T6E 1N9
			Buchanan Lumber P.O. Box 38 High Prairie, Alta. T0G 1E0
Treated wood		5.1	Domtar Chemicals Group, Wood Preserving 1170-10201 Southport Rd. S.W. Calgary, Alta. T2W 4X9
Structural frames		5.1	Zavisha Sawmills Ltd. P.O. Box 60 Hines Creek, Alta. T0H 2A0
Softwood plywood		5.2	Zeidler Forest Industries Ltd. P.O Box 4370 Edmonton, Alta. T6E 1N9

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Plywood		5.2	Canadian Forest Products Postal Bag 100 Grande Prairie, Alta. T8V 3A3
Polyurethane sandwich panel		5.2	BTU Panels Ltd. 53323 Range Road 232 Sherwood Park, Alta. T8A 4V2
Wood trusses		5.5	Timber Tech Truss Systems Ltd. 1405-31 Street Lethbridge, Alta. T1H 5G8
			Central Alberta Truss Fabricators Ltd. P.O. Box 790 Sylvan Lake, Alta. T0M 1Z0
			Structural Truss Systems Box 1690 112 - 23 Street Fort MacLeod, Alta. T0L 0Z0
Wood roof trusses		5.5	Alberta Truss Ltd. Box 3066 Sherwood Park, Alta. T8A 2A6
Wood floor trusses		5.5	Structural Truss Systems Box 1690 112-23 Street Fort MacLeod, Alta. T0L 0Z0
			Alberta Truss Ltd. Box 3066 Sherwood Park, Alta. T8A 2A6

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Roof trusses		5.5	Kunico Truss & Prefab Ltd. 1276-32 Street S.W. Box 34 Medicine Hat, Alta. T1A 7E5
Floor trusses		5.5	Kunico Truss & Prefab Ltd. Box 1690 112-23 Street Fort MacLeod, Alta. T0L 0Z0
Web stock		5.5	Sunchild Forest Products P.O. Box 68 Winterburn, Alta. T0E 2N0
Acrylic staircases		5.11	Chinook Plastics Ltd. 4339-14 Street N.E. Calgary, Alta. T2E 7A9
Spiral stair kits		5.11	Lonnal Welding and Manufacturing Ltd. P.O. Box 23 Bashaw, Alta. T0B 0H0
Pre-fab stairs		5.11	Muttart Home Centre Inc. Box 310 10930-84 Street Edmonton, Alta. T5J 2J6
Wood stairs		5.11	Kunico Truss & Prefab Ltd. 1276-32 Street S.W. Box 34 Medicine Hat, Alta. T1A 7E5

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Wood stairs		5.11	Timber Tech Truss Systems Ltd. 1405-31 Street Lethbridge, Alta. T1H 5G8
		5.11	Raymond A. Becker Construction P.O. Box 314 Medicine Hat, Alta. T1A 7G1
Prefab wall panels		5.12	Nascor Incorporated 7803-35 Street S.E. Calgary, Alta. T2C 1V3
Hand-craft log walls		5.12	Moose Mountain Log Homes Inc. Ltd. P.O. Box 26 Bragg Creek, Alta. T0L 0K0
Metal roof panels	Roofing	6.0	McCready Manufacturing Box 3555, Station D Edmonton, Alta. T5L 4J8
Copper roofs		6.0	SMF Special Metals Fabricating 14631-119 Avenue Edmonton, Alta. T5L 2N9
Asphalt roof cement		6.1	Elsro Construction Products 38A Rayborn Crescent St. Albert, Alberta T8N 3C7
Asphalt felt		6.1	Building Products of Canada 3703-101 Avenue Edmonton, Alta. T5J 2K8

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Asphalt roofing products		6.1	IKO Industries Box 1325 1600-42 Ave. S.E. Calgary, Alta. T2P 2L2
Asphalt shingles		6.1	Building Products of Canada 3703-101 Avenue Edmonton, Alta. T5J 2K8
Concrete roof tile		6.3	Unicrete Products Ltd. P.O. Box 245, Stn. T Calgary, Alta.
Skylight flashings		6.4	SMF Special Metals Fabricating Ltd. 14631-119 Avenue Edmonton, Alta. T5L 2N9
Metal roof flashings		6.4	Alpine Heating Ltd. 6832-82 Avenue Edmonton, Alta.
Flashing		6.4	Alberta Eavestroughing (Edmonton) Ltd. 12516-124 Street Edmonton, Alta. T5L 0N5
Brass/copper trim		6.4	SMF Special Metals Fabricating Ltd. 14631-119 Avenue Edmonton, Alta. T5L 2N9
Sheet metal		6.4	Alberta Eavestroughing (Edmonton) Ltd. 12516-124 Street Edmonton, Alta. T5L 0N5

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Eavestroughs/fittings		6.5	Alberta Eavestroughing (Edmonton) Ltd. 12516-124 Street Edmonton, Alta. T5L 0N5
Downspout, vent pipe		6.5	Alberta Eavestroughing (Edmonton) Ltd. 12516-124 Street Edmonton, Alta. T5L 0N5
Wood windows	Windows	7.0	Indal Building Products 2008-48 Street S.E. Calgary, Alta. T2B 2E5 Calgary Sash & Door Ltd. 735-41 Avenue N.E. Calgary, Alta. T2E 6R5 Loewen Windows Bay 2, 1329-45 Ave. N.E. Calgary, Alta. T2E 2P3 Kelly Loaders Woodworking 504-8 Ave. E, Box 156 Bow Island, Alta. T0K 0G0 Resource Window Products 6945-75 Street Edmonton, Alta. T6E 2W7 Gergely's Glass Ltd. 335-13 Street North Lethbridge, Alta. T1H 2S1

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Aluminum windows		7.0	Gergely's Glass Ltd. 335-13 Street North Lethbridge, Alta. T1H 2S1
			Aleaco Windows 15348-116 Avenue Edmonton, Alta. T5M 3Z6
			Pigat Aluminum Ltd. O/A Alberta Aluminum 245-12A Street North Lethbridge, Alta. T1H 2J1
			Resource Window Products 6945-75 Street Edmonton, Alta. T6E 2W7
			Indal Building Products 2008-48 Street S.E. Calgary, Alta. T2B 2E5
Wood/aluminum custom windows		7.0	G.M. Woodwork Ltd. 2111-50 Street S.E. Calgary, Alta. T2B 1M8
Fiberglass windows		7.0	Resource Window Products 6945-75 Street Edmonton, Alta. T6E 2W7
Vinyl windows		7.0	Remodeller Manufacturing 3810-48 Street Wetaskiwin, Alta. T9A 2J2

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
PVC windows			Indal Building Products 2008-48 Street S.E. Calgary, Alta. T2B 2E5
Acrylic sheets		7.0	Chinook Plastics Ltd. 4339-14 Street N.E. Calgary, Alta. T2E 7A9
Aluminum clad windows		7.0	Calgary Sash & Door Ltd. 735-41 Ave. N.E. Calgary, Alta. T2E 6R5
			Loewen Windows Bay 2, 1329-45 Ave. N.E. Calgary, Alta. T2E 2P3
			Pigat Aluminum Ltd. O/A Alberta Aluminum 245-12A Street North Lethbridge, Alta. T1H 2J1
Crezone panel (windows)		7.0	G.M. Woodwork Ltd. 2111-50 Street S.E. Calgary, Alta. T2B 1M8
Insulated glass		7.3	Crystal Glass Manufacturing Ltd. 9550-45 Avenue Edmonton, Alta. T6H 5Y9
Insulated glass units		7.3	Bridge Seal Glass #10, 2900-7 Ave. North Lethbridge, Alta. T1H 5C6

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Sealed glass units		7.3	Pigat Aluminum Ltd. O/A Alberta Aluminum 245-12A Street North Lethbridge, Alta. T1H 2J1
Wood/plastic grille		7.4	G.M. Woodwork Ltd. 2111-50 Street S.E. Calgary, Alta. T2B 1M8
Window sealant		7.4	Chemtron Manufacturing Ltd. 6201 Centre St. South Calgary, Alta. T2H 0C7
Wood skylights		7.5	Gergely's Glass Ltd. 335-13 Street North Lethbridge, Alta. T1H 2S1
Glass skylights		7.5	Mac Plastics Ltd. 5214-93 Street Edmonton, Alta. T6E 5K3
Aluminum skylights		7.5	Gergely's Glass Ltd. 335-13 Street North Lethbridge, Alta. T1H 2S1
Acrylic skylights		7.5	Chinook Plastics Ltd. 4339-14 Street N.E. Calgary, Alta. T2E 7A9
Plastic skylights		7.5	Mac Plastics Ltd. 5214-93 Street Edmonton, Alta. T6E 5K3

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Fibreboard insulation	Insulation and vapour barrier	8.0	IKO Industries Box 1325, 1600-42 Ave. S.E. Calgary, Alta. T2P 2L2
Polyurethane insulations		8.0	BTU Panels Ltd. 53323 Range Road 232 Sherwood Park, Alta. T8A 4V2
Polyethylene film		8.1	Layfield Plastics Ltd. 14604-115A Avenue Edmonton, Alta. T5M 3C5
Fiberglass batt insulation		8.3	Manville Canada Inc. Box 819 Innisfail, Alta. TOM 1AO
Wood siding	Exterior finishes	9.2	Medicine Lodge Timber Products Box 7132 Edson, Alta. TOE OPO
Masonry blocks		9.5	Edcon, Division of CCI Industries P.O. Box 2083 St. Albert, Alta. T8N 2A3
Trowel-ready mortar		9.5	IXL Industries Ltd. P.O. Box 70 Medicine Hat, Alta. T1A 7E7
Clay face brick		9.5	IXL Industries Ltd. P.O. Box 70 Medicine Hat, Alta. T1A 7E7

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Concrete masonry		9.5	Edcon, Division of CCI Industries P.O. Box 2083 St. Albert, Alta. T8N 2A3
Concrete brick		9.5	Allkind Masonry Concrete Products Ltd. Box 20, Site 5, R.R.5 9420-52 Street S.E. Calgary, Alta.
Exterior doors	Doors & frames exterior & commercial weights	10.0	Loewen Windows Bay 2, 1329-45 Ave. N.E. Calgary, Alta. T2E 2P3 W.S.I. Holdings Ltd. 215 Carnegie Drive St. Albert, Alta. T8V 3V1
Doors/frames		10.0	Paul Cas Custom Woodworking and Contracting P.O. Box 506 Cold Lake, Alta. T0A 0V0
Composite doors		10.0	Resource Window Products 6945-75 Street Edmonton, Alta. T6E 2W7
Exterior door units		10.0	Muttart Home Centre Inc. Box 310, 10930-84 Street Edmonton, Alta. T5J 2J6
Insulated wood doors		10.0	Kelly Ladders Woodworking 504-8 Avenue E, Box 156 Bow Island, Alta. T0K 0G0

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Aluminum doors		10.5	Dorland Commercial Doors 11729-156 Street Edmonton, Alta. T5M 3N4
Steel doors		10.5	Calgary Sash & Door Ltd. 735-41 Avenue N.E. Calgary, Alta. T2E 6R5
Wood & aluminum patio doors		10.11	Indal Building Products 2008-48 Street S.E. Calgary, Alta. T2B 2E5
Wooden garage doors		10.13	Kelly Ladders Woodworking 504-8 Avenue E, Box 156 Bow Island, Alta. T0K 0G0 ED Flak Mfg. 3115-16 Avenue North Lethbridge, Alta. T1H 5E8 Calgary Overhead Door 9, 3504-66 Avenue S.E. Calgary, Alta. T2C 1P3
Wood garage doors prehung		10.13	Calgary Sash & Door Ltd. 735-41 Avenue N.E. Calgary, Alta. T2E 6R5
Steel garage doors		10.13	Calgary Overhead Door 9, 3504-66 Avenue S.E. Calgary, Alta. T2C 1P3

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Garage doors		10.13	K. & F. Rollshutter Mfg. Ltd. 2435-80 Avenue Edmonton, Alta. T6P 1N3
Insulated steel garage doors		10.13	Calgary Overhead Door 9, 3504-66 Avenue S.E. Calgary, Alta. T2C 1P3
Panel-type garage doors		10.13	Calgary Overhead Door 9, 3504-66 Avenue S.E. Calgary, Alta. T2C 1P3
Drywall trims	Interior wall/ceiling finishes	11.1	Canadian Steel Manufacturing 10022-29 Avenue Edmonton, Alta. T6N 1A2
Drywall adhesive		11.1	Chemtron Manufacturing Ltd. 6201 Centre St. South Calgary, Alta. T2H 0C7
Wall panelling		11.7	Jade Marble Crafts Ltd. 4020-7 Street S.E. Calgary, Alta. T2G 2Y8
Pine flooring	Flooring	12.0	Medicine Lodge Timber Products Box 7132 Edson, Alta. T0E 0P0

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Doors	Millwork (cabinetwork)	14.0	Canmore Woodcrafters Box 59, #6 Industrial Pl. Canmore, Alta. TOH OMO
Wood doors		14.0	Sauder Industries 7740-40 Avenue Red Deer, Alta. T4P 2H9
Interior wood doors		14.0	W.S.I. Holdings Ltd. 215 Carnegie Drive St. Albert, Alta. T8V 3V1
			Kelly Lodders Woodworking 504-8 Ave. E, Box 156 Bow Island, Alta. TOK OGO
Wooden interior/ exterior doors		14.0	Gerto Cabinets & Furniture P.O. Box 1571 121 Col. Dr. Claresholm, Alta. TOL OTO
Prehung door units		14.0	Gunthers' Building Centre Ltd. 2100-10 Avenue S.W. Calgary, Alta. T3C OK5
Interior door units		14.0	Muttart Home Centre Inc. Box 310 10930-84 Street Edmonton, Alta. T5J 2J6
Cabinets		14.0	Raymond A. Becker Construction P.O. Box 314 Medicine Hat, Alta. T1A 7G1

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Wood cabinets		14.0	Home Builders Supply P.O. Box 383, 291-5 St. W. Caroston, Alta. T0K 0K0
Custom cabinets		14.0	Pohling Woodworking Ltd. 10011-167 Street Edmonton, Alta. T5P 3W3
Custom oak cabinets		14.0	Craig H. Schindler, Cabinetmaker Box 565, 481-4 St. N.E. Caroston, Alta. T0K 0K0
Plywood cabinets		14.0	Fred's Wood Shop 38 Rosswood Street E. Ardrossan, Alta.
China cabinets		14.0	Paul Cas Custom Woodworking and Contracting P.O. Box 506 Cold Lake, Alta. T0A 0V0
Cabinet doors		14.0	P.F. Manufacturing Ltd. 10417-174 Street Edmonton, Alta. T5S 1H1
		14.0	K. C. Door Ltd. Box 388 Stavely, Alta. T0L 1Z0
Bookcases/wall units		14.0	Bow Woodcraft Ltd. 6915-32 Avenue N.W. Calgary, Alta. T3B 0K6

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Wall systems		14.0	Ruhland Industries Ltd. Box 330 Drayton Valley, Alta. T0E 0M0
Wood millwork		14.0	Geist Woodworking P.O. Box 1066 7220-4 Avenue Edson, Alta. T0E 0P0
		14.0	Craig H. Schindler, Cabinetmaker Box 565, 481-4 St. N.E. Cardston, Alta. T0K 0K0
Fireplace mantels		14.0	Canmore Woodcrafters Box 59, #6 Industrial Pl. Canmore, Alta. T0H 0M0
Special mouldings		14.0	Paul Cas Custom Woodworking and Contracting P.O. Box 506 Cold Lake, Alta. T0A 0V0
Hardwood lumber		14.0	Gunthers' Building Centre Ltd. 2100-10 Avenue S.W. Calgary, Alta. T3C 0K5
Mirror bi-fold/ by-pass doors		14.0	Gunthers' Building Centre Ltd. 2100-10 Avenue S.W. Calgary, Alta. T3C 0K5

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Woodwork		14.0	Pohling Woodworking Ltd. 10011-167 Street Edmonton, Alta. T5P 3W3
Wood mouldings		14.6	Classic Mouldings 315-41 Avenue N.E. Calgary, Alta. T2E 2N4
Vinyl baseboards		14.7	My-Ro Products Ltd. #13, 6025-12 Street S.E. Calgary, Alta. T2H 2K1
Vanity tops		14.8	Jade Marble Crafts Ltd. 4020-7 Street S.E. Calgary, Alta. T2G 2Y8
Bathroom vanities		14.8	Mar Tone Products (1986) Ltd. 12903-146 Street Edmonton, Alta. T5L 2H6 Scandinavian Woodcraft R.R.2 Gwynne, Alta. T0C 1L0 Dionne's Custom Woodworking Ltd. P.O. Box 220 Delburne, Alta. T0M 0V0 Bow Woodcraft Ltd. 6915-32 Avenue N.W. Calgary, Alta. T3B 0K6

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Bathroom vanities		14.8	Canmore Woodcrafters Box 59, #6 Industrial Pl. Canmore, Alta. T0H 0M0
Wooden bathroom vanities		14.8	Geist Woodworking P.O. Box 1066 7220-4 Avenue Edson, Alta. T0E 0P0
Bathroom cabinets		14.8	Matt-n-Al Woodworking 1986 Ltd. #2, 420 MacAlpine Cres. Fort McMurray, Alta. T9H 4B1
Kitchen cabinets		14.9	Paul Cas Custom Woodworking and Contracting P.O. Box 506 Cold Lake, Alta. T0A 0V0
			Dionne's Custom Woodworking Ltd. P.O. Box 220 Delburne, Alta. T0M 0V0
			Scandinavian Woodcraft R.R.2 Gwynne, Alta. T0C 1L0
			Ruhland Industries Ltd. Box 330 Drayton Valley, Alta. T0E 0M0
			Bow Woodcraft Ltd. 6915-32 Avenue N.W. Calgary, Alta. T3B 0K6

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Kitchen cabinets		14.9	Canmore Woodcrafters Box 59, #6 Industrial Pl. Canmore, Alta. TOH OMO
			Lafleur Carpentry Ltd. 108, 12709-99 Street Grande Prairie, Alta. T8V 5Z4
Wooden kitchen cabinets		14.9	Geist Woodworking P.O. Box 1066 7220-4 Avenue Edson, Alta. TOE OPO
Oak kitchen cabinets		14.9	Gerto Cabinets and Furniture Ltd. P.O. Box 1571 121 Col. Dr. Claresholm, Alta. TOL OTO
Countertops		14.9	Lafleur Carpentry Ltd. 108, 12709-99 Street Grande Prairie, Alta. T8V 5Z4
			Bow Woodcraft Ltd. 6915-32 Avenue N.W. Calgary, Alta. T3B OK6
Moulded plastic countertops		14.9	P.F. Manufacturing Ltd. 10417-174 Street Edmonton, Alta. T5S 1H1
Vacuum-formed tub enclosures		16.5	Chinook Plastics Ltd. 4339-14 Street N.E. Calgary, Alta. T2E 7A9

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Plastic tub enclosures	Bathroom accessories	16.5	P.F. Manufacturing Ltd. 10417-174 Street Edmonton, Alta. T5S 1H1
Panelling (marble)		16.5	Athenian Marble Products Ltd. Bay 25, 4216-54 Ave. S.E. Calgary, Alta.
Medicine cabinets		16.8	Lafleur Carpentry Ltd. 108, 12709-99 Street Grande Prairie, Alta. T8V 5Z4
Garbage chutes	Miscellaneous items	17.0	Alpine Heating Ltd. 6832-82 Avenue Edmonton, Alta.
Central vacuums (PP)		17.1	Dyno-Vac Manufacturing Ltd. #8, 7429-49 Avenue Red Deer, Alta. T4P 1N2
Burglar alarm screens		17.6	Microscreen 11303-143 Street Edmonton, Alta. T5M 3T8
Burglar alarm bars		17.6	Microscreen 11303-143 Street Edmonton, Alta. T5M 3T8
Window guards		17.6	Coaldale Iron Products Ltd. P.O. Box 2 1209-18 Avenue Coaldale, Alta. T0K 0L0

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Awnings		17.7	Pigat Aluminum Ltd. O/A Alberta Aluminum 245-12A Street North Lethbridge, Alta. T1H 2J1
Aluminum awnings		17.7	McCready Manufacturing Box 3555, Station D Edmonton, Alta. T5L 4J8
Wood louvres/ shutters		17.8	G.M. Woodwork Ltd. 2111-50 Street S.E. Calgary, Alta. T2B 1M8
Rollshutters		17.8	Rolco Mfg. Ltd. 7008-30 Street S.E. Calgary, Alta. T2C 1N9
Shutters		17.8	K. & F. Rollshutter Mfg. Ltd. 2435-80 Avenue Edmonton, Alta. T6P 1N3
Marble tubs		20.3	Athenian Marble Products Ltd. Bay 35, 4216-54 Avenue S.E. Calgary, Alta.
Cultured marble tubs		20.3	Athenian Marble Products Ltd. Bay 35, 4216-54 Avenue S.E. Calgary, Alta.
Bathtubs		20.3	Jade Marble Crafts Ltd. 4020-7 Street S.E. Calgary, Alta. T2G 2Y8

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Shower bases		20.5	Jade Marble Crafts Ltd. 4020-7 Street S.E. Calgary, Alta. T2G 2Y8
Polyethylene water tubing		20.8	Foothills Plastic Industries Ltd. 2028-2 Avenue S.E. Calgary, Alta. T2E 6J9
Concrete holding tank	Plumbing	20.11	Monarch Concrete Products Ltd. 16910-129 Avenue N.W. Edmonton, Alta. T5V 1L1
Manhole extensions		20.11	Tri-Hard Concrete Products Ltd. P.O. Box 547 St. Paul, Alta. T0A 3A0
Concrete septic tanks		20.11	P. Kruger Concrete Products (Calgary) Ltd. 2501 Aryth Road S.E. Calgary, Alta. T2G 1P7 Monarch Concrete septic Ltd. 16910-129 Avenue N.W. Edmonton, Alta. T5V 1L1 Van's Concrete Ltd. Box 1141 Lacombe, Alta. T0C 1S0

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Concrete septic tanks		20.11	Tri-Hard Concrete Products Ltd. P.O. Box 547 St. Paul, Alta. T0A 3A0
Metaseal (sealant)	Heating and ventilation	21.0	Chemtron Manufacturing Ltd. 6201 Centre St. South Calgary, Alta. T2H 0C7
Sheet metal ductwork		21.3	Alpine Heating Ltd. 6832-82 Avenue Edmonton, Alta.
Chimney dampers		21.15	Coaldale Iron Products Ltd. P.O. Box 2 1209-18 Avenue Coaldale, Alta. T0K 0L0
Fireplace heatilator		21.15	Coaldale Iron Products Ltd. P.O. Box 2 1209-18 Avenue Coaldale, Alta. T0K 0L0
Clay flue lining		21.15	IXL Industries Ltd. P.O. Box 70 Medicine Hat, Alta. T1A 7E7
Clay firebrick		21.15	IXL Industries Ltd. P.O. Box 70 Medicine Hat, Alta. T1A 7E7 Alcon Refrigeration & Heating Ltd. 3195-5 Avenue Lethbridge, Alta.

Table 3.4 (continued)

Alberta Manufacturers by Type of Product Produced

Material/item	Product category used in	Category number	Manufacturer
Oak wrap lighting		22.8	Ruhland Industries Ltd. Box 330 Drayton Valley, Alta. T0E 0M0

3.4.2 Market Location

A number of questions in the survey dealt with where manufacturers sold their products. The survey identified the types of industries which tended to serve their local area (within 100 km of the plan) versus a wider area. Also examined were the market areas of companies located in northern and southern Alberta. Thirdly, industries which sold their products in other parts of Canada and the world were examined.

The 120 companies which responded to the survey manufactured 251 individual products that could be used in wood frame residential construction. Of these products, 56% were sold mostly (80% plus) within 100 km of the plant. Products that were more likely to be sold locally are windows, concrete (both ready-mix and precast), kitchen and bathroom cabinets, doors, and lumber from small-scale producers. Products that tend to be sold over a larger market area are roofing products, insulation, lumber from larger producers, and various specialty products such as vinyl baseboards, central vacuums, burglar alarm screens, etc.

Companies were also asked what percent of their products they sold in northern Alberta, southern Alberta, the rest of Canada, and outside

Canada. About 56% of the products were mostly (80% plus) sold within the half of the province (north and south of Red Deer) in which they were manufactured. It is of note that products produced in southern Alberta tended to be sold within southern Alberta more than those produced in northern Alberta were sold in northern Alberta. Using the same 80% cutoff figure used above, 50% of northern Alberta companies sell the large majority of their product locally; the corresponding figure for southern Alberta is 63%. One reason for this is the high number of dimension lumber producers located in northern Alberta which tend to have larger market areas.

As was the case in 1984, most of the products which are sold outside Alberta are sold to Saskatchewan, British Columbia and Ontario. Since then, it appears (though no actual figures exist) that more products are being sold outside the province and in particular to the Northwest Territories and the Yukon. Nine companies now export to the United States and other companies are exporting to West Germany, Japan, and Algeria. For the most part, products which are exported across international borders are dimension lumber, asphalt roofing products, and a couple of less significant specialty products such as burglar alarm bars. Products which move across provincial borders tend to be a lot broader and cover most product categories listed in the survey, with the exception of things such as ready-mix concrete and cabinets.

3.4.3 Backward and Forward Production Linkages

In order to obtain information on backward and forward production linkages, manufacturers were asked what percentage of each of the products they manufacture (up to four) were sold to the following: other manufacturers, wholesale/retail outlets, and contractor/direct sales.

Of the 253 products identified in this question, 16% were sold in some portion to other manufacturers for further processing. Cement, however, was the only product which was 100% sold to other manufacturers. Other products which were mostly (80% plus) sold to

other manufacturers are: some specialty custom windows, insulated glass units, and wood/plastic window grilles. Other products sold to other manufacturers were dimension lumber, windows, doors, pre-fab stairs, wood louvers/shutters, crezone panels (decoration), flashing, sealants, and some eavestrough components.

On average, over 53% of the products produced were sold to contractors, about 39% to wholesalers, and about 5% to other manufacturers. These percentages do not add up exactly to 100%, as the respondents did not always account for all of the product produced.

3.4.4 Identification and Source of Raw Materials

Manufacturers were asked to identify what "major components or starting materials" they use in the manufacturing of their products. They were also asked if they knew where the material was produced. While it was emphasized that the production location of the material was desired, it is suspected that some respondents answered with the purchase location of the material. As one would expect, respondents were frequently unaware of where the starting materials were produced.

About 45 different material or component categories were identified, and while no indication of volumes of use was made, these products were mentioned over 760 times by the responding companies. Table 3.5 lists the frequently mentioned components along with their sources in order of the number of times mentioned. The percent column presents the proportion of times this component was mentioned out of 760 and does not represent any type of volume measure.

While the sources of raw materials are similar to the ones identified in the 1985 study, i.e., Alberta and British Columbia being the source of the less-refined components, with Ontario being the source of such things as hardware, plastics, resins, etc., the sources do appear to have changed somewhat. Component or starting materials appear now to be brought in from a wider range of places. Manitoba was often mentioned as a source of components previously coming from Ontario.

Table 3.5

Source of Raw Materials

Products and Sources	% Mentioned
Nails and other hardware Alberta, Ontario, U.S.A. (other), Europe, Illinois	12.0%
Dimension lumber Alberta, British Columbia, U.S.A. (other), Utah, California	8.4%
Trees Alberta, British Columbia	7.1%
Paints, stains and lacquer Alberta, Ontario, Quebec, Manitoba, U.S.A., Europe	6.8%
Resin, plastic, polystyrene Alberta, Texas, Ontario, U.S.A. (other), Manitoba, British Columbia	6.4%
Hardwood U.S.A., British Columbia,Quebec, Eastern Canada	6.2%
Plywood Alberta, British Columbia, U.S.A.,Ontario, Indonesia, Taiwan	6.0%
Glass/mirrors Alberta, Ontario, U.S.A., British Columbia, Taiwan	5.8%
Sealants, hardeners, acids Ontario, Alberta, U.S.A., Manitoba	5.5%
Aluminum products Alberta, Manitoba, Ontario, British Columbia, Japan	5.4%
Vinyl components Alberta, Ontario, Mantitoba, Quebec	4.9%
Sand and clay Alberta, Alabama, British Columbia	4.3%
Steel products Alberta, Ontario, British Columbia, Saskatchewan	3.9%
Galvanized metal Alberta, Ontario	3.4%

Table 3.5 (continued)

Source of Raw Materials

Products and Sources	% Mentioned
Rock, aggregate, gravel Alberta, Ontario	3.3%
Cement Alberta	1.7%
Fiberglass insulation Alberta, British Columbia	.9%
Asphalt Alberta	.8%
Other	7.2%
(Percent base)	(760)

A wider array of components was also being brought in from British Columbia and the U.S.A.

3.4.5 Market Share/Competition

For the 1985 study, market share and competition were examined by asking very specific questions about percent market share and the number of companies in an industry. The results indicated that very few companies knew such information, so for this study it was decided simply to ask respondents to "describe the level of competition for each of [their] products: very competitive, somewhat competitive, not very competitive." Of the 241 products for which this question was answered, 63% of the product markets were described as very competitive, 29% as somewhat competitive, and 7.5% as not very competitive.

It is impossible to define how competitive a particular industry is on the basis of the question. In general, and as one would expect,

industries with more companies in them, such as dimension lumber or kitchen cabinets, tended to be described as "very competitive," while the more specialized products such as insulated wood doors, shutters, burglar alarm bars and chimney dampers were described as "not very competitive." This, however, was not always the case, as some dimension lumber producers and kitchen cabinet makers described their industries as "not competitive" or "somewhat competitive." In industries such as these, the market may be a very small geographic area with limited competition, explaining this apparent inconsistency. For example, a cabinet maker in Fort Chip might describe the market as "not competitive," while a cabinet maker in Edmonton might describe it as "very competitive."

Some product markets of note which were described as "somewhat competitive" are steel forms, pine flooring, cement, brick and other masonry products, flashing and metal railings.

3.4.6 Future Production Plans

Manufacturers were asked a series of questions on their future plans, both on presently produced products and on new products which could be used in wood frame residential construction.

The first question asked if manufacturers planned to increase, decrease or maintain the same production levels of the specified products in the coming year. For the 232 specified products, manufacturers planned to increase the production levels of 53% of the products, decrease production for 4%, and keep production levels the same for the remaining 43%. While this appears to indicate a general feeling of optimism in the residential construction industry, it would appear to indicate a more pessimistic outlook than was revealed in the 1985 study. In that survey, companies were asked about their plans over a two-year period, and all production was aggregated. That survey indicated that, of 168 companies which answered the question, 64% planned to increase production, 24% did not, and 12% did not know. While the wording and structure of the questions are different,

indications are that a greater level of expansion was planned in 1984 than in 1989.

There was no observable pattern as to which product categories planned to increase production and which ones planned to reduce production. The changes were company specific, with increases and decreases in production levels occurring in all industries.

Although manufacturers were asked the volume of the change in planned production, the number who responded to the question made the pertinence of this data limited.

Of the 115 companies who answered the question regarding the production of new products that may be used in residential wood frame construction, 19 responded affirmatively. Sixty-two did not have any such plans, and 34 did not know. Table 3.6 lists the types of new products that manufacturers intend to start producing.

3.4.7 Component Materials

Manufacturers were asked if there are any items or materials which they use in production that should be more readily available in Alberta. About 60 different products were mentioned by the respondents. Items which were mentioned consistently were resins, logs, lumber and various types of hardware. While hardware and resins were mentioned a number of times in the 1985 study, the lack of appropriate trees and timber appears to be a new problem faced by manufacturers. Cement, which was mentioned a number of times in the 1985 study, appears to be less significant this year, with only one manufacturer wanting to see it available at "fair market prices." Table 3.7 presents a list of all the products mentioned by respondents.

Table 3.6

Products Which May Be Manufactured in the Near Future

Product	Anticipated Annual Volume
Carpet adhesive	n/a
Vinyl tile adhesive	n/a
Ceramic tile adhesive	n/a
Wood basement system	n/a
Drywall/trim	4,048,000 m
Metal fascia	100,000 m^2
Inside wood shutters	1,000 units
Vacuum-formed parts	n/a
Cabinets	100 units
Aspen lumber	14,158 m^3
Stair units	n/a
Metal siding	600 units
Vinyl patio doors	300 doors
Cretex stone and brick	n/a
Pressure-treated lumber	n/a
Granite "look" for kitchens	n/a
Panelling	n/a
Roof rafters	n/a

Table 3.7

Products Manufacturers Would Like to See More Available in Alberta

Gravel
Cement (at fair market prices)
Raw steel
Urethanes
Solvents
Resins (x2), phenolic resin, acceptable quality resins, resins (polyester), styrene resin
Light-weight aggregate
Bead for expanded polystyrene
High-quality building logs
Trees (x2), more trees, accessibility to timber quotas, consistent supply of larger trees
Lumber - better grades, more timber, need more timber available to smaller operations, raw lumber, lumber (x 2), hardwood lumber (x 2)
Flour, wood flour, wheat flour
Soda ash
Chemicals for treating lumber
Co-cob
Iron oxide
Aluminum products
Powder paint, wet paint, paint
Stainless steel
Steel doors
Glass
Custom hardware for grilles, door hardware, cabinet components, window hardware
Plastic sheet (acrylic)
Feldspar (sand)
Adhesives
Galvanized sheet metal
Steel strapping
PVC (x 2)
Sealant
Glass/vinyl components
K-3 industrial board
Hardwood llllaminates
Plastics, vinyls
Dolomite
Aluminum and plastic extrusions
Insulated profiles
Marine-grade plywood

3.4.8 Number of Employees

The 120 companies that responded to the survey employed 5,081 full-time employees.[1] persons in 1988. This is an average of 42 persons per company. The larger employers (200 persons plus) operated in the following industries: lumber, plywood, insulation, windows, ready-mix concrete, and concrete/bricks. The smaller one- or two-person companies, also in the lumber business, operated in such areas as millwork and cabinet making.

Table 3.8 shows the percentage of responding firms who employed various numbers of employees for 1981, 1984 and 1988. While one realizes that these samples are not necessarily representative of the entire industry, certain trends are indicated, notably, the proportion of small (employing less than 10 persons) companies appears to be growing. These firms could be new companies or down-sized older ones; in either respect, a trend appears to have developed.

3.4.9 Years of Operation

Table 3.9 indicates the number of years the responding companies have been in operation. Again, while one cannot rely on the representativeness of the survey data, the data may suggest that fewer companies have started up in the last five years than in the five-year period prior to that. While it may be the case that a higher proportion of companies which started up in the last five years have gone out of business, the data may reflect a poor environment for new business in the recent past.

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[1] Respondents were asked to estimate full-year equivalents, i.e., two half-time employees would equal one full-time person year.

Table 3.8

Number of Employees by Proportion of Firms

Number of Employees	Proportion of Firms		
	1981	1984	1988
0 - 9	27%	33%	44%
10 - 19	21%	21%	20%
20 - 34	13%	13%	12%
35 - 49	8%	8%	8%
50 - 74	10%	5%	2%
75 - 99	3%	4%	1%
100 - 199	9%	10%	7%
200 - 399	5%	4%	5%
400+	4%	2%	1%
(Percent base)	150	168	120

Table 3.9

Years in Operation of Companies

Number of Years	Number of Companies
<5	6
5 - 9	23
10 - 19	36
20 - 29	24
30 - 39	14
40 - 49	7
>50	10
Total	120

4.0 ALBERTA PRODUCTION SURPLUSES AND SUPPLY SHORTAGES

4.1 Methodological Discussion

In order to identify inflows and outflows of various residential building products within the Alberta market, information on the supply and demand of the major products or product categories will now be examined. By comparing the supply and demand of the identified products, various shortages and surpluses within the market will be identified.

It should be remembered, though, that Alberta is not a closed system and no restrictions to trade exist between provinces. Therefore, it is frequently the case that goods flow across provincial boundaries irrespective of whether there is a "shortage" or "surplus" of a particular product within Alberta. It should be realized, therefore, that an identified shortage of a product may be less of an indicator of manufacturing potential than it would be within a national context.

Tables 4.0 to 4.3 present the projected demand of various products used in wood frame residential construction from 1984 to 1991. While actual demand for these products may depend on a number of other factors, it is felt for the purposes of this study that the figures presented are accurate enough to allow for the identification of surpluses and shortages in the immediate future.

While the demand-side estimates are considered accurate, the information on the supply side is more limited. Ideally, with a 100% response rate and perfectly completed surveys, one would have had a very accurate idea of the supply of these products. Without this information, however, estimates had to be made based on the following information:

1. The surveys: If the respondent surveys within a sector indicate that a surplus exists, then any non-responding firms would only add to this surplus;

Table 4.0

Projected Demand of Building Products Used in Single Detached House Construction, 1984-1991

Category Number	Product Category	1984	1989	1991
1.0	Concrete foundations	$13,738,930	$57,433,6123	$60,035,014
2.0	Dampproofing, weeping tile	1,487,155	4,806,600	5,006,875
4.0	Entry steps	2,479,021	3,648,000	3,800,000
5.0	Rough framing	22,641,615	75,960,372	79,125,388
6.0	Roofing **	6,226,968	12,297,744	12,810,150
7.0	Windows	4,158,967	28,152,000	29,325,000
8.0	Insulation & vapor barrier	5,520,124	21,247,800	22,133,125
9.0	Exterior finishes *	7,191,223	24,804,300	25,837,813
10.0	Exterior doors & frames	5,321,748	23,071,200	24,032,500
11.0	Interior wall/ceiling finishes	5,784,254	21,966,960	23,882,250
12.0	Flooring	6,264,895	36,282,840	37,794,625
13.0	Painting	2,806,575	11,796,000	12,287,500
14.0	Millwork	12,623,441	50,698,260	52,810,688
15.0	Hardware	513,800	4,126,920	4,298,875
16.0	Bathroom accessories	648,420	4,252,800	4,430,000
17.0	Miscellaneous	--	9,015,840	9,391,500
20.0	Plumbing	7,790,439	40,934,234	44,733,162
21.0	Heating & ventilation	7,649,604	35,734,560	37,223,500
22.0	Electrical	3,110,005	28,751,283	29,164,881

* Includes brick facade and vinyl siding.
** Does not include cedar shingles

Table 4.1

Projected Demand of Building Products Used in Single Attached House Construction, 1984-1991

Category Number	Product Category	1984	1989	1991
1.0	Concrete foundation	$170,466	$3,843,104	$5,762,656
2.0	Dampproofing, weeping tile	18,452	176,496	264,744
4.0	Entry steps	41,011	243,200	464,800
5.0	Rough framing	374,569	5,208,462	6,909,157
6.0	Roofing **	103,015	529,256	943,884
7.0	Windows	68,803	1,840,000	2,761,200
8.0	Insulation & vapor barrier	91,322	1,116,520	2,124,780
9.0	Exterior finishes *	89,225	1,410,271	2,115,404
10.0	Exterior doors & frames	88,040	1,014,080	1,521,120
11.0	Interior wall/ceiling finishes	95,691	1,463,664	2,196,696
12.0	Flooring	103,643	2,435,536	3,653,284
13.0	Painting	46,430	754,400	1,130,800
14.0	Millwork	208,835	3,379,884	5,079,826
15.0	Hardware	8,500	273,128	412,692
16.0	Bathroom accessories	10,727	283,520	425,280
17.0	Miscellaneous	--	601,056	901,574
20.0	Plumbing	128,880	2,731,842	4,098,611
21.0	Heating & ventilation	126,550	2,113,796	3,326,694
22.0	Electrical	51,450	1,895,354	2,841,027

* Includes brick facade and vinyl siding.
** Does not include cedar shingles

Table 4.2

Projected Demand of Building Products
Used in Row House Construction, 1984-1991

Category Number	Product Category	1984	1989	1991
1.0	Concrete foundation	$ 369,678	$3,074,483	$4,601,725
2.0	Dampproofing, weeping tile	40,015	156,749	211,795
4.0	Entry steps	114,350	194,560	291,840
5.0	Rough framing	1,044,387	3,638,806	5,458,209
6.0	Roofing **	143,615	503,405	778,235
7.0	Windows	191,840	1,472,640	2,208,960
8.0	Insulation & vapor barrier	254,626	1,133,216	1,699,824
9.0	Exterior finishes *	193,497	1,056,402	1,584,602
10.0	Exterior doors & frames	245,476	811,264	1,216,896
11.0	Interior wall/ceiling finishes	266,810	1,171,672	1,757,356
12.0	Flooring	288,980	1,948,428	2,922,644
13.0	Painting	129,459	603,520	905,080
14.0	Millwork	582,280	2,703,908	4,055,860
15.0	Hardware	23,700	220,102	330,154
16.0	Bathroom accessories	29,910	226,816	340,224
17.0	Miscellaneous	--	480,845	721,267
20.0	Plumbing	359,349	2,186,832	3,268,920
21.0	Heating & ventilation	352,853	1,691,037	2,536,555
22.0	Electrical	143,455	1,448,251	2,174,718

* Includes brick facade and vinyl siding.
** Does not include cedar shingles

Table 4.3

Projected Demand of Building Products
Used in Walk-Up Apartment Construction, 1984-1991

Category Number	Product Category	1984	1989	1991
1.0	Concrete foundation	$ 112,047	$3,138,954	$4,668,427
2.0	Dampproofing, weeping tile	5,605	3,288	4,783
4.0	Entry steps	90,470	167,249	250,873
5.0	Rough framing	690,156	622,386	933,578
6.0	Roofing	130,637	182,865	274,297
7.0	Windows	62,087	107,256	160,883
8.0	Insulation & vapor barrier	96,911	84,295	126,440
9.0	*Exterior finishes	30,865	113,039	169,396
10.0	Exterior doors & frames	379,039	407,304	560,956
11.0	Interior wall/ceiling finishes	210,171	19,449,549	29,174,325
12.0	Flooring	231,712	276,695	415,194
13.0	Painting	132,981	104,220	156,330
14.0	Millwork	349,746	514,955	707,406
15.0	Hardware	17,901	24,008	36,027
16.0	Bathroom accessories	29,801	24,660	36,990
17.0	Miscellaneous	17,459	11,260	16,890
20.0	Plumbing	427,677	324,958	489,229
21.0	Heating & ventilation	178,789	154,875	233,794
22.0	Electrical	206,634	302,310	482,581

* Includes stucco finishing.

Table 4.4

Projected Demand of Building Products Used in Residential Construction: 1984-1991

Category Number	Product Category	1984	1989	1991
1.0	Concrete foundations	$14,391,121	$67,490,153	$75,067,822
2.0	Damproofing, tile	1,551,227	5,143,133	5,488,197
4.0	Entry steps	2,724,852	4,252,009	4,807,513
5.0	Rough framing	24,750,727	85,430,026	92,426,332
6.0	Roofing **	6,604,235	13,613,270	14,806,566
7.0	Windows	4,481,696	31,571,896	34,456,043
8.0	Insulation & vapor barrier	5,962,983	23,581,831	26,084,169
9.0	Exterior finishes *	7,504,810	27,384,012	29,707,215
10.0	Exterior doors & frames	6,034,303	25,682,887	27,331,471
11.0	Interior wall/ceiling finishes	6,356,926	44,051 845	57,010,627
12.0	Flooring	6,889,230	40,943,499	44,785,747
13.0	Painting	3,115,445	13,258,140	14,479,710
14.0	Millwork	13,764,302	57,297,007	62,653,780
15.0	Hardware	563,901	4,644,158	5,077,748
16.0	Bathroom accessories	718,858	4,787,796	5,232,494
17.0	Miscellaneous	-	10,237,881	11.031.231
20.0	Plumbing	8,706,345	46,177,866	49,569,922
21.0	Heating & ventilating	8,307,796	40,694,268	43,320,543
22.0	Electrical	5,511,545	32,397,198	34,663,207

* Includes brick facade, vinyl siding and stucco.
** Does not include cedar shingles.

2. The initial list of 740 companies: If no widget manufacturers were identified, and a demand for widgets existed, then evidently a shortage would exist;

3. Statistics Canada information: While somewhat out of date, it does provide an idea of the number of establishments within some of the industries. This, when used in conjunction with the survey information, allows for further projections of supply.

4. Alberta Economic Development provides (although limited within the subject industry) figures on products which are imported and exported to and from other countries.

This system leads to a relatively high level of uncertainty. Shortages and surpluses have therefore been indicated only where a reasonable level of confidence exists. Where information is unclear or the differences between supply and demand are marginal, the term "unknown" is used. As the response rate of this year's survey is lower than the one carried out for the 1985 study, the level of uncertainty has increased, as have the number of "unknowns." Where feasible, 1985 information has been used to supplement 1989 results.

4.2 Production Surpluses and Shortages

Table 4.5 lists the products and, in some cases, product groups identified in "standard" wood frame residential construction and shows where shortages and surpluses exist. The table also indicates the destination of products which are known to be exported from Alberta, irrespective of whether a surplus has been identified. The table also presents (when known) the sources of imports into Alberta for products in shortage.

As the level of certainty in the previous study was higher and little evidence of much change exists, it is deemed important to compare estimated surpluses and shortages reported in this study with estimates produced in 1985. The 1985 estimates are shown in Table 4.6.

Table 4.5

Alberta Production Shortage or Surplus of

Standard Residential Building Products*

Category Number	Product Category	Production Shortage/ Surplus	Destination of Exports or Source of Imports
1.0	Foundations		
.1	Concrete foundation concrete	Surplus	--
	Form plywood	Surplus	Ont., Que.
	Dimension lumber	Surplus	U.S., Ont., Man., Japan, B.C.
	Form ties	Shortage	
	Nails	Shortage	
	Reinforcing steel bars	Unknown	
	Anchor bolts	Shortage	
	Polyethylene sheet	Unknown	B.C., Ont.
	Welded wire mesh	Unknown	
.2	Preserved wood foundations		
	Pressure-treated plywood	Unknown	
	Pressure-treated dimension lumber	Unknown	Ont.
	Hot dipped galvanized nails	Shortage	
	Caulking/sealant	Unknown	
	Polyethylene sheet	Unknown	B.C., Ont.
	Anchor bolts	Shortage	
2.0	Weeping tile/dampproofing		
	Plastic perforated pipe	Unknown	
	Asphalt emulsion	Unknown	Sask., Man.
	Weeping tile rock	Unknown	
	Fibrous batt insulation	Surplus	Que. and other provinces
4.0	Railings		
	Wrought iron railings	Unknown	
	Precast concrete steps	Unknown	

* Based on manufacturers' estimates and building projections for 1989.

Table 4.5 (continued)

Alberta Production Shortage or Surplus of

Standard Residential Building Products

Category Number	Product Category	Production Shortage/ Surplus	Destination of Exports If Not Used within Province or Source of Imports
5.0	Rough framing	Surplus	
.1	Dimension lumber	Surplus	U.S., Ont., Man., Japan, B.C.
.1	Pre-formed trusses	Surplus	Sask., B.C., Man.
.2	Sheathing material	Surplus	Ont. and other provinces
.3	Adjustable steel posts	Unknown	
.5	Wood trusses	Unknown	Sask., B.C.
.7	Nails	Shortage	Ont., Japan, Taiwan
.8	Construction adhesive	Unknown	
.9	Sheathing screws	Shortage	
.10	Polyethylene sheet	Unknown	B.C., Ont.
.11	Premanufactured wood stairs	Unknown	
6.0	Roofing		
	Black building felt	Unknown	B.C.
.1	Asphalt shingle	Surplus	B.C., U.S.A.
	Roofing nails	Shortage	
	Tab down cement	Unknown	Sask., Man.
.2	Polyethylene sheet	Unknown	B.C., Ont.
	Shingle nails	Shortage	
	Cedar shakes	Unknown	
.4	Flashing	Unknown	
.5	Eavestroughing and downspouts	Unknown	
7.0	Windows	Unknown	U.S., N.W.T., B.C., Sask., Man.
8.0	Insulation and vapour barriers		
.1	Polyethylene sheet	Unknown	B.C., Ont.
.3	Fibrous batt insulation	Surplus	Que.
.5	Polystyrene insulation	Unknown	
9.0	Exterior finishes		
	Black building paper	Unknown	
.1	Stucco	Unknown	
.2	Beveled cedar siding, trim board	Unknown	

Table 4.5 (continued)

Alberta Production Shortage or Surplus of

Standard Residential Building Products

Category Number	Product Category	Production Shortage/ Surplus	Destination of Exports If Not Used within Province or Source of Imports
9.3	Aluminum siding	Shortage	
.5	Brick siding	Unknown	B.C.
.6	Vinyl siding	Shortage	
.7	Soffits	Unknown	
.8	Vents	Shortage	
.9	Sealant	Unknown	
10.0	Exterior doors and frames	Surplus	Yukon, N.W.T., Sask., B.C.
	Garage doors	Unknown	Sask.
11.0	Interior wall/ceiling		
.1	Drywall	Unknown	
.6	Tile	Shortage	
12.0	Flooring		
.1	Carpet	Shortage	
.3	Resilient flooring	Shortage	
13.0	Paint	Unknown	
14.0	Millwork	Unknown	N.W.T., Yukon, Sask., Man., Ont., B.C.
15.0	Hardware	Shortage	
16.0	Bathroom Accessories	Shortage	
17.0	Miscellaneous items		
	Mail box	Shortage	
20.0	Plumbing (general)	Shortage	
	P.V.C. pipe	Unknown	B.C., Sask.
21.0	Mechanical	Shortage	
22.0	Electrical	Shortage	

While the main difference between the two tables is the higher number of "unknowns" in Table 4.5, they cannot be viewed as indicative of any real change in the industry. For example, Table 4.6 indicates several additional product shortages not indicated in Table 4.5. While these shortages are not confirmed by this study they were not refuted, either

Table 4.7 lists a number of other products manufactured in Alberta that are not examined as being components of the "average" house or 24-unit apartment building. These products would frequently be used in renovation, home improvement, and in the obviously large number of residential units built in Alberta which do not conform to standard or average building practices.

It is interesting to note that a high proportion of the companies that manufacture these "non-standard" products export a high proportion of their product outside Alberta. In fact, the surveyed central vacuum, vinyl baseboard, and burglar alarm bar manufacturers all sell more of their product outside Alberta than inside. While other manufacturers sell most of their product within Alberta, these more specialized products do tend to have larger market areas.

Table 4.8 further elaborates on products (from Table 4.5) which are produced in quantities in excess of those consumed in the Alberta residential building market. While these products are often consumed in other industries within Alberta, there is a proven export market for all these products, with the possible exception of ready-mix concrete. As mentioned before, there are no evident real changes between the products produced in surplus for this study and those produced in 1985. As was the case in 1985, it was found that the availability of raw materials such as wood products, oil base derivatives, and cheap sources of energy were the main factors in giving Alberta-based companies the competitive edge which enabled them to sell their products outside Alberta. Information on product shortages is only an indication of any real shortages, as estimates of supply are very difficult, if not impossible, to make. Estimates of demand and comments on supply for the products are presented in Table 4.9.

Table 4.6

Alberta Production Shortage or Surplus of Standard Residential Building Products (1985 Study)

Category Number	Product Category	Production Shortage/ Surplus	Destination of Export	Source of Supply
1.0	Foundations			
.1	Concrete foundations			
	concrete	Surplus	Other types of construction within province	
	Form plywood	Surplus	Other provinces, U.S.A.	
	Dimension lumber	Surplus	Other provinces, U.S.A.	
	Form ties	Unknown		
	Nails	Shortage		Ont., Japan
	Reinforcing steel bars	Surplus	Other types of construction within province	
	Anchor bolts	Shortage		Ont.
	Polyethylene sheet	Shortage		Ont.
	Welded wire mesh	Unknown		
.2	Preserved wood foundations			
	Pressure-treated plywood	Shortage		B.C.
	Pressure-treated dimension lumber	Shortage		B.C.
	Hot dipped galvanized nails	Shortage		Ont.
	Caulking/sealant	Unknown		
	Polyethylene sheet	Shortage		Ont.
	Anchor bolts	Shortage		Ont.
2.0	Weeping tile/ dampproofing			
	Plastic perforated pipe	Surplus		
	Asphalt emulsion	Surplus	Other provinces	
	Weeping tile rock	Surplus	Other types of construction within province	
	Fibrous batt insulation	Surplus	Other provinces	
4.0	Railings			
	Wrought iron railings	Shortage		Unknown

Table 4.6 (continued)

Alberta Production Shortage or Surplus of Standard

Residential Building Products (1985 Study)

Category Number	Product Category	Production Shortage/ Surplus	Destination of Export	Source of Supply
4.0	Hand rail on wall	Shortage		Unknown
	Precast concrete steps	Surplus	Unknown	
5.0	Rough framing			
.1	Dimension lumber	Surplus	Other provinces, U.S.A.	
.2	Sheathing material	Surplus	Other provinces, U.S.A.	
.3	Adjustable steel posts	Shortage		Ont.
.4	Joist hangers	Shortage		Unknown
.5	Wood trusses	Surplus		
.7	Nails	Shortage		Ont., Japan
.8	Construction adhesive	Unknown		
.9	Sheathing screws	Shortage		Ont.
.10	Polyethylene sheeting	Shortage		Ont.
.11	Premanufactured wood stairs	Surplus	Unknown	
6.0	Roofing			
	Black building felt	Shortage		Other provinces
.1	Asphalt shingle	Surplus	Other provinces	
	Roofing nails	Shortage		Ont.
	Tab down cement	Shortage		Unknown
.2	Polyethylene sheet	Shortage		B.C., U.S.A.
	Shingle nails	Shortage		Ont.
	Cedar shakes	Shortage		B.C., U.S.A.
.4	Flashing	Shortage		Unknown
.5	Eavestroughing and downspouts	Unknown		
7.0	Windows	Surplus		B.C., Sask.
8.0	Insulation and vapour barriers			
.1	Polyethylene sheet	Shortage		Ont.

Table 4.6 (continued)

Alberta Production Shortage or Surplus of Standard Residential Building Products (1985 Study)

Category Number	Product Category	Production Shortage/ Surplus	Destination of Export	Source of Supply
8.3	Fibrous batt insulation	Surplus	Other types of construction within province	
.5	Polystyrene foam	Surplus	Other types of construction within province Other provinces	
.6	Treated cellulose	Unknown		
.7	Blown fiberglass	Not measured		
9.0	Exterior finishes			
	Black building felt	Surplus	Other provinces	
.1	Stucco	Unknown		
.2	Beveled cedar siding, trim boards	Shortage		B.C., U.S.A.
.3	Aluminum siding	Shortage	Unknown	
.7	Soffits	Surplus	Unknown	
.8	Vents	Shortage		Unknown
.9	Sealant	Shortage		Eastern Canada
10.0	Exterior doors and frames	Surplus	Other types of construction within province Other provinces	
11.0	Interior wall/ceiling			
.1	Drywall	Surplus	Other types of construction within province Other provinces	
.6	Tile	Shortage		Other provinces
12.0	Flooring			
.1	Carpet	Shortage		Eastern Canada, U.S.A.
.3	Resilient flooring	Shortage		Unknown

Table 4.6 (continued)

Alberta Production Shortage or Surplus of Standard Residential Building Products (1985 Study)

Category Number	Product Category	Production Shortage/ Surplus	Destination of Export	Source of Supply
13.0	Paint	Shortage		Other provinces
14.0	Millwork	Surplus	Other types of construction within province Other provinces	
15.0	Hardware	Shortage		Ont.
16.0	Bathroom accessories	Shortage		Ont.
17.0	Miscellaneous items Mail box	Shortage		Unknown
20.0	Plumbing	Shortage		B.C., Man., Ont.
21.0	Heating and ventilation	Shortage		Other provinces
22.0	Electrical	Shortage		Other provinces

Table 4.7

Other Products Not Identified for Use in Standard

Residential Wood Frame Construction

Category		Product Category Material
1.0	Foundation	Cu-all blocks Prefab basement wall panels
4.0	Entry steps	Metal stairs
5.0	Rough framing	Prefab wall panels Hand-crafted log walls Spiral stair kits
6.0	Roofing	Concrete roof tile Metal roof panels Cooper roofs
7.0	Windows	Sky light flashings Windows - various materials Skylights - various materials Wood louvers/shutters
9.0	Exterior finishes	Clay face brick Concrete masonary Concrete brick
10.0	Doors and frames (exterior)	Wooden doors Insulated wooden doors
11.0	Interior wall/ceiling finishes	Wall panelling Vinyl baseboards
14.0	Millwork (cabinetwork)	Mirrored by-pass doors Fireplace mantels
16.0	Bathroom Accessories	Bath surrounds
17.0	Miscellaneous items	Central vacuums Burglar alarm screens Roll shutters Shutters Window guards
20.0	Plumbing	Septic tanks Marble tubs Shower bases

Table 4.7 (continued)

Other Products Not Identified for Use in Standard

Residential Wood Frame Construction

Category	Product Category Material
21.0 Heating and ventilation	Fireplace heatilators Chimney dampers Clay fire brick
22.0 Electrical	Oak wrap lighting

Table 4.8

Selected Surplus - Residential Building Products

Product	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimates
Ready-mix concrete	462,864 m^3	500,000 m^3+	5 companies (out of 30 plus) projected 1989 production in excess of 100,000 m^3 and capacity of 590,000 m^3.
Form plywood + Sheathing material Reconstituted wood	181,000 m^2 + 4,343,000 m^2 4,524,000 m^2	6,500,000 m^2+	2 companies out of over 30 establishments identified by Statistics Canada estimated '89 production totalling 1,532,231 m^2. Furthermore, both reporting companies stated they sell over 80% of their product outside Alberta.
Dimension lumber	243,000 m^3	2,266,000 m^3+	25 companies out of 38 establishments identified by Statistics Canada estimated 1989 production to be 2,266,000 m^3.
Pre-formed trusses	451,000 units	500,000 units+	5 companies (out of 34 plus identified in the original index) projected 1989 production to be 324,100 units.

Table 4.8 (continued)

Selected Surplus - Residential Building Products

Product	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimates
Fibrous batt insulation	RS1-2.1 4,032,000 batts RS1-3.5 4,060,000 batts RS 1-6 34,000 batts	45,000 tonnes	A company representative of one of two Alberta manufacturers estimated total production to be in excess of 45,000 tonnes, an amount which outstrips Alberta demand by a factor of 5 or 6.
Asphalt shingles	1,919,000 m^2	20,000,000 m^2+ (asphalt roofing products)	One of two surveyed companies, both of similar size, intends to produce 15,000,000 m^2 of asphalt roofing products in 1989. Given this, one can safely assume a surplus of asphalt shingles exists.
Windows	120,000 units	177,000 units+	Based on 10 responding window manufacturers' (all material types) estimates for 1989 production.

Table 4.9

Residential Building Shortage Products

Product or Product Group	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimate
Form ties	9,637,000 units	0	No indication that they are manufactured in Alberta.
Nails	1,641,000 kg.	0	No indication that they are manufactured in Alberta.
Anchor bolts	643,000 units	0	No indication that they are manufactured in Alberta.
Aluminum siding	169,000 m^2	0	No indication that it is manufactured in Alberta.
Vinyl siding	870,000 m^2	--	One manufacturer was identified in the last study; however, it did not participate in the survey this year.
Tile	122,000 m^2	--	One manufacturer was identified in the last study; however, it did not participate in the survey this year.
Carpet	1,516,000 m^2	0	No indication that any is manufactured in Alberta.
Paint	1,486,000 l	--	One manufacturer was identified in the last study; however, it did not participate in the survey this year.
Hardware	Not identified separately	--	Although Statistics Canada information indicates 34 "basic hardware" manufacturers existed in 1986, none responded to the survey.

Table 4.9 (continued)

Residential Building Shortage Products

Product or Product Group	Estimated Demand for 1989	Estimated Supply for 1989	Comment on Supply Estimate
Mechanical - Plumbing	$53,391,000 worth	--	With the exception of a couple of bathtub and septic tank manufacturers and a polyethylene pipe and shower base manufacturer, little else is manufactured in Alberta.
Mechanical - HVAC	$35,664,000 worth	--	Few manufacturers in the province; none that participated in the survey.
Electrical	$35,105,000 worth	--	With the exception of some electrical boxes, very little else is manufactured in Alberta.

5.0 POTENTIAL EXPORT AND IMPORT SUBSTITUTES

5.1 Selection Criteria

This section identifies and analyzes those products which were identified as having large production surpluses or shortages in Alberta. The products discussed are those identified in this report as having particular significance in residential construction. Products which are already exported were examined with an eye to increased production and export possibilities. Those products that are imported into Alberta were examined from the point of view of manufacturing them here.

It should be pointed out that emphasis has been placed on products used in standard construction rather than on the numerous alternative products in existence. This is due mainly to two factors: one, "alternate" products tend not to be as significant to the industry as the ones used in the average buildings; and two, efforts have been centred on estimating the demand for products used in wood frame residential construction. It would have been nearly impossible to make meaningful estimations on all the alternative products available. An exhaustive examination of the potential for further development within the identified industries is not within the scope of this report.

5.2 Surplus Products

Surplus products have been identified and outlined in Table 4.8. These industries are examined in greater detail.

Ready-Mix Concrete

There is minimal potential for export of this product due to its short shelf life and weight.

The five ready-mix concrete producers who responded to the survey, alone produced, while operating at 18% of their capacity, 45% or 106,415 m^3 of the 1989 estimated demand. Although only a small portion of ready-mix concrete is used in the subject market, there appears to be no obvious room for expansion within the industry.

Reconstituted Wood

While only two plywood manufacturers (over 30 reconstituted wood manufacturers were identified by Statistics Canada in 1986) responded to the survey, it was easily determined that Alberta exports considerable quantities of these products. Both surveyed producers export over 80% of their product to central Canada and one exports a considerable amount to the U.S.A. The Alberta Government's "International Trade Review 1987" also indicates that Alberta exported 17,434 m^2 of particle board to the U.S.A. in 1987; other exports across international borders of reconstituted wood products were not mentioned.[1]

Although the survey yielded little information on this particular industry, the one producer that revealed his company's capacity indicated it was operating at 100%. It appears that Alberta companies within this industry have a healthy export market, and one that may very well have room for expansion.

Dimension Lumber

Twenty-five dimension lumber producers, in comparison to the 38 establishments identified by Statistics Canada in 1986, responded to the survey, and this, it is felt, provides good insight into the industry. The dimension lumber industry is operating at about 92% capacity, which is higher than most of the other identified industries

[1] International Trade Review 1987, Ministry of Economic Development and Trade, p. 164.

and a considerable improvement from 1984 when the responding companies were operating at only 55%. Many of the surveyed firms export the majority of their product. Most of the exports go to Ontario, Saskatchewan, Manitoba and the U.S.A.; however, at least two firms are exporting to Japan.

The dimension lumber industry appears very healthy at present. One issue outlined consistently on the comments section of the survey was that present tree allocations were inadequate. Evidently, this is not an issue which can be dealt with here; however, it does indicate that this may very well be the bottleneck to future export development within this industry.

Pre-Formed Trusses

While the information on the wood truss industry is not as complete as in other sectors, indications are that Alberta is self-sufficient and exports some product to its neighboring provinces. Of the five reporting companies, three sell their product outside Alberta and two of them export about 20% of their product. While transportation costs related to product size may be of issue, there may be additional market opportunities worth examining.

Fibrous Batt Insulation

Two of Canada's seven fiberglass insulation plants are located in Alberta - one in Edmonton and the other in central Alberta. While only one of the two companies responded to the survey, estimations are that total production is in excess of 45,000 tonnes and that production outstrips Alberta demand by a factor of 5 or 6. At present, most of the product not consumed in Alberta is sold in other provinces; however, free trade may open other markets to the south.

The responding company did not provide information on capacity, but the abundant sources of inexpensive energy and other major raw materials

such as silica sand available in Alberta suggest that this will continue to be a profitable Alberta export industry.

Asphalt Shingles

Two asphalt product producers responded to the survey, and while only one gave information on levels of production, there does appear to be a healthy export market for these products. As both companies employ similar numbers of people (335 in total), it is assumed that annual production for asphalt products (shingles and felt) must be well in excess of 20 million m^2. One of the firms exports 76% of its products to B.C., while the other exports about 45% to the B.C. and U.S. markets combined. The competitive advantage of this Alberta industry is again related to the oil industry, which provides the asphalt. The company which reported on its production levels, however, indicates that it is operating at just over 50% capacity, suggesting there is limited room for expansion at present.

Windows

Ten manufacturers of windows (all material types) responded to the survey. This represents 67% of the number of wooden window manufacturers identified by Statistics Canada in 1986 and double the metal-frame window producers. It is therefore felt to be a good representation of the market. While sales outside the province do not make up a significant portion of the responding firms' business, six companies indicated they do export to the neighboring provinces and the Northwest Territories. The nature of the product, however, limits the development of export further afield. Furthermore, while some vinyl is available in Alberta, many of the other starting components have to be imported from the U.S. or central Canada, limiting any competitive advantage. At present, the industry is operating at an average (all material types) of 52% capacity, which would suggest there is little room for expansion at present.

5.3 Shortage Products

As previously mentioned, the products for which a manufacturing shortage in Alberta has been identified in this study are not significantly different from those discussed in the 1985 report. Consequently, along with a discussion of the products outlined in Table 4.9, a review of those products discussed in the 1985 report is presented.

Manufactured Metal Products

Products such as form ties, nails, screws, anchor bolts and other metal hardware are for the most part imported from central Canada and, in particular, Ontario. Alberta does not appear to offer particular advantages in respect to manufacturing these products.

Aluminum Siding

Aluminum siding demand was estimated at 169,000 m^2 for 1989, and while this represents over $6 million of product, discussions with architects indicate that vinyl is for the most part replacing aluminum as the imitation wood siding product of choice.

Vinyl Siding

Vinyl siding was identified as an alternate product for the 1985 study but has now been classified as the standard exterior siding and is estimated to be used in approximately 50% of house construction in the province. In 1985 one manufacturer of vinyl siding was identified in the survey; however, he did not participate this year. The company had been operating since 1981 and was planning to expand production.

As a result of the 1985 study's findings, a further report was prepared on the viability of producing PVC-based products such as vinyl siding in Alberta. The size and location of the markets led to the conclusion that additional vinyl siding manufacturing was not particularly

opportune at that time. The market has matured since then, and opportunities within this sector may have improved.

Ceramic Tile

The estimated demand for ceramic tile for 1989 was 122,000 m^2 or $2.7 million. There is known to be one tile producer in Alberta; however, most tile is imported from central Canada and Europe. While figures are not available for the amount imported from central Canada, the International Trade Review 1987 indicates that 22,770 m^2 were imported from abroad, mostly from Spain and Portugal. Other tile products are known to be imported from Italy, Mexico and South America. The high quality sand and clay and reasonably priced abundant energy source (natural gas) which are required to produce these tiles are available in Alberta. Furthermore, the weight of the product would favor local production. While most residential buildings (and other types) consume the ceramic tile and raw materials that are available, this industry has traditionally been labor intensive and any further development would likely require the development of new technology.

Carpet

In 1989 1,516,000 m^2 of carpet were estimated to be consumed in new residential construction alone. The conventional carpet industry, however, is very capital intensive, and any development in Alberta would require new or innovative technology to provide a competitive advantage.

Mechanical - Plumbing

About $53 million worth of various plumbing fixtures were estimated to be consumed in Alberta by new residential construction in 1989. Apart from some water tubing and bathtubs, most were imported from Ontario, B.C. and Manitoba. Extensive manufacturing of the metal products is probably not feasible within Alberta, and, while PVC pipe is already produced in Alberta, the previously mentioned study on PVC products

suggested that economies of scale and high start-up costs would discourage further development.

Mechanical - HVAC

While ductwork is produced in Alberta, most of the other $36 million worth of mechanical - HVAC products are imported to the province from central Canada, the U.S.A. or other Pacific Rim countries. Statistics Canada identified two manufacturers of "heating, air conditioning and refrigeration equipment" in 1986, but neither of them participated in the survey and no other information is available on them. Although it may be viable to manufacture mechanical residential building products in Alberta, there appears to be no competitive advantage available to an Alberta producer.

Electrical

Just over $35 million worth of electrical products was estimated to be used in residential construction in 1989, most of which was imported from Ontario. Some Alberta steel fabrication plants manufacture panel and outlet boxes. It may be feasible to produce other electrical products such as wire, light fixtures, etc., within Alberta; however, most of the raw materials would have to be imported, and, with the possible exception of energy prices, no evident competitive advantage would exist.

Plastic Downspout and Drainage Pipe

Despite the fact that vinyl siding is now the standard exterior siding product and has replaced aluminum as the main imitation wood product, plastic downspout and drainage pipe is still considered an alternative product to galvanized or prefinished steel. As mentioned in the 1985 report, the durability and color availability of this product will continue to make it a popular alternative, if not the standard choice, in years to come. Several manufacturers of these products existed in 1985, although none participated in the 1989 survey. Plastic

feedstock, an oil derivative, gives these manufacturers a competitive edge which allows them to sell all over Alberta, eastern B.C., and western Saskatchewan.

Paint

In 1985 one Alberta paint manufacturer was identified. It sold 80% of its product locally, which still meant that 95% of the paint used in Alberta was imported from outside Alberta. For 1989 it is estimated that 1.5 million litres of paint will be consumed in new residential construction alone. As most of the raw materials required to manufacture paint products are available in Alberta, this industry may contain some growth potential. No information as to present production levels of the previously identified company was available this year.

Glass

As was the case in 1985, very few primary glass manufacturers are located in Alberta and most glass is imported from central Canada or the U.S.A. Glass was selected as a product with high potential because Alberta has high-quality sands which are needed to produce glass. While the inexpensive energy sources available in Alberta may also provide some competitive advantage to Alberta producers, conventional glass manufacturing is very capital intensive. These conventional full-size plants also need to be close to sizable markets because of high freight costs. Potential development, however, may exist in specialty glass or small-scale development.

Hardwood Moulding and Trim

In the 1985 report it was suggested that aspen may be used as an alternative to some of the other types of hardwood not available in Alberta. While there is no specific information on whether aspen is being used more in place of hardwood, one company reported obtaining it from an Alberta source. It is of note that one company does intend to

start producing aspen lumber in the coming year; however, no detail was given as to its intended market.

Summary

The greatest potential for development within the wood frame residential product market appears to be in industries which rely heavily on the use of softwood lumber, oil-based derivatives, or abundant sources of inexpensive energy. For the most part, products discussed in Section 5.2 (Surplus Products) which meet these criteria have a proven track record and continue to expand. The products discussed in Section 5.3 (Shortage Products), however, have less certain potential. Alberta does not appear to have particular competitive advantages with respect to these products. Additional manufacturing opportunities in respect to these and other building materials would seem to depend more upon local development of new and better products.

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APPENDIX 'A'

QUESTIONNAIRE AND COVERING LETTERS

June 15, 1989

HLA CONSULTANTS

President/Chief Executive Officer

Dear Sir or Madam:

Please find attached a questionnaire requesting information about products which you manufacture and which are used in residential wood frame construction. The questionnaire is designed so that it can be answered easily and very quickly. Note that the questions are printed on both sides of the page.

We would like to emphasize that all replies will be held strictly confidential. Once received, the questionnaires will then be destroyed.

Due to the time-line of this project, we are requesting your cooperation in completing this questionnaire within two weeks of receiving it. Please return the questionnaire in the self-addressed stamped envelope.

Your cooperation is greatly appreciated. Thank you.

Sincerely
HLA CONSULTANTS

Roger LeFrancois

Roger LeFrancois
Principal

RL/jr
Enclosure

210 Capilano Mall, 5004 - 98 Avenue, Edmonton, Alberta T6A 0A1 Telephone 465-6840

Alberta

MUNICIPAL AFFAIRS

Jarvis Building, 9925 - 107th Street, Edmonton, Alberta, Canada T5K 2H9

In Replying Please Quote

June 15, 1989

President/Chief Executive Officer

Dear Sir or Madam:

The Housing Division of Alberta Municipal Affairs has hired the firm of HLA Consultants to conduct a study to identify the types, quantities and prices of building products used in housing in Alberta and their Alberta manufacturers to encourage production and consumption of Alberta-made products.

As part of the study, the consultants are conducting a survey of all firms in Alberta involved in the production or assembly of construction materials. We would appreciate your co-operation in completing the attached questionnaire according to the instructions outlined in the attached letter.

Firms producing residential building products in Alberta that provide the information requested will be listed in a section of the report by type of product produced. The report will be distributed to builders and manufacturers with a view to encouraging use of Alberta-made products. Firms not responding will not be placed on the list of Alberta producers.

We assure you that the information you provide will be kept strictly confidential. I thank you in advance for your co-operation. If you have any questions please call or write:

Mr. Roger LeFrancois
HLA Consultants
210 Capilano Mall
5004 - 98 Avenue
Edmonton, Alberta
T6A 0A1

(403) 468-6840
Fax: 466-7382

or

Mr. Rex Adam
Alberta Municipal Affairs
2nd Floor, 9925 - 107 Street
Edmonton, Alberta
T5K 2H9

(403) 427-8150
Fax: 422-9105

Yours truly,

W. K. Mann
Assistant Deputy Minister

Enclosure

ALBERTA RESIDENTIAL BUILDING PRODUCT CENSUS

Please complete the following questionnaire as it applies to products you manufacture within Alberta that can be used in **residential wood frame construction**, i.e., conventional residential houses and walk-up apartments. We have provided space for only four products. If you produce more than this, please select those most significant to the wood framed residential building market. Please identify general product types (by **material** type) rather than specific product lines.

EXAMPLES:

TYPE	RATHER THAN
"**aluminum** windows"	"windows", or "bow windows"
"**fiberglass** batt insulation"	"insulation", or 4" insulation

1. What products do you manufacture which can be used in residential wood frame construction?
   PRODUCT 1 _____
   PRODUCT 2 _____
   PRODUCT 3 _____
   PRODUCT 4 _____

2. What is each of these products used for?
   PRODUCT 1 _____
   PRODUCT 2 _____
   PRODUCT 3 _____
   PRODUCT 4 _____

3. What were the volumes (quantity) of each product produced in 1988? (Please state appropriate units of measure, i.e., m, m^2, units, etc.)

PRODUCT 1 _____
PRODUCT 2 _____
PRODUCT 3 _____
PRODUCT 4 _____

4. What was the annual total value of each product produced F.O.B. the plant, for 1988?

PRODUCT 1 _____
PRODUCT 2 _____
PRODUCT 3 _____
PRODUCT 4 _____

5. What is the maximum quantity (in units) you could produce of each product in a year?

PRODUCT 1 _____
PRODUCT 2 _____
PRODUCT 3 _____
PRODUCT 4 _____

6. Indicate, by circling the appropriate number, all of the major components or starting materials that you use to manufacture each of the identified products. For example, if rock was used in products 1 and 2, circle both. Please indicate, if known, the location each material is PRODUCED (NOT purchased).

STARTING COMPONENTS	PRODUCTS	LOCATION	
		town/city	province/country
Aluminum Products	1 2 3 4	_____	_____
Asphalt	1 2 3 4	_____	_____
Dimension Lumber	1 2 3 4	_____	_____
Fiberglass, Insulation	1 2 3 4	_____	_____
Galvanized Metal	1 2 3 4	_____	_____
Glass, Mirrors	1 2 3 4	_____	_____
Hardwood	1 2 3 4	_____	_____
Lighting Fixture Components	1 2 3 4	_____	_____
Nails, Hardware	1 2 3 4	_____	_____
Paints, Stains, Lacquers	1 2 3 4	_____	_____
Plywood	1 2 3 4	_____	_____
Resins, Plastic, Polystyrene	1 2 3 4	_____	_____
Rock, Aggregate, Gravel	1 2 3 4	_____	_____
Sand, Clay	1 2 3 4	_____	_____
Sealants, Hardners, Acids	1 2 3 4	_____	_____
Steel Products	1 2 3 4	_____	_____
Trees	1 2 3 4	_____	_____
Wax	1 2 3 4	_____	_____
Vinyl Components	1 2 3 4	_____	_____
Other, please specify:			
_____	1 2 3 4	_____	_____
_____	1 2 3 4	_____	_____

7. Estimate the percentage of each product you sell to the following:

	Other Manufacturers		Wholesale/retail Outlets		Contractors/ Direct Sales	
PRODUCT 1	_____%	+	_____%	+	_____%	= 100%
PRODUCT 2	_____%	+	_____%	+	_____%	= 100%
PRODUCT 3	_____%	+	_____%	+	_____%	= 100%
PRODUCT 4	_____%	+	_____%	+	_____%	= 100%

8. What percentage of each product do you sell locally (within 100 km. of the plant)?

PRODUCT 1 _____%
PRODUCT 2 _____%
PRODUCT 3 _____%
PRODUCT 4 _____%

9. What percentage of each product do you sell in each of the following areas (include local area sales where appropriate).

	In Alberta: Red Deer and North		In Alberta: South of Red Deer		Canada: Outside of Alberta		Outside of Canada	
PRODUCT 1	_____%	+	_____%	+	_____%	+	_____%	= 100%
PRODUCT 2	_____%	+	_____%	+	_____%	+	_____%	= 100%
PRODUCT 3	_____%	+	_____%	+	_____%	+	_____%	= 100%
PRODUCT 4	_____%	+	_____%	+	_____%	+	_____%	= 100%

10. If you sell your product(s) outside of Alberta, to which Province/Country do you export the greatest volume?

PRODUCT 1 _____
PRODUCT 2 _____
PRODUCT 3 _____
PRODUCT 4 _____

11. How would you describe the level of competition for each of the products? Please check one for each product.

	Very Competetive	Somewhat Competetive	Not Very Competetive
PRODUCT 1	_____	_____	_____
PRODUCT 2	_____	_____	_____
PRODUCT 3	_____	_____	_____
PRODUCT 4	_____	_____	_____

12. Do you plan to change the production of any of the specified products in the coming year? (Please check one for each product.)

	Increase	Decrease	Same
PRODUCT 1	_____	_____	_____
PRODUCT 2	_____	_____	_____
PRODUCT 3	_____	_____	_____
PRODUCT 4	_____	_____	_____

13. If you do, how much do you intend to increase/decrease volume by (specify appropriate units)?

PRODUCT 1 _____
PRODUCT 2 _____
PRODUCT 3 _____
PRODUCT 4 _____

14. Do you plan to start producing other products which could be used in wood frame residential construction (i.e. something you do not presently produce)? Check one.

_____ Yes
_____ No
_____ Don't Know

15. If yes: what are these products and their anticipated yearly unit volumes?

PRODUCT	ESTIMATED YEARLY UNIT VOLUME
_____	_____
_____	_____
_____	_____

16. Are there any components or materials which you use in the production process and which you would like to see more readily available in Alberta?

_____yes
_____no

16a. IF YES, then, please identify

PRODUCT 1 _____
PRODUCT 2 _____
PRODUCT 3 _____
PRODUCT 4 _____

17. How many **years** has your company been in operation?

_____

18. How many individuals were employed by your company in 1988? (Please estimate full year equivalents, i.e., two half time employees would equal one full time person year.)

_____

Please indicate the contact name and phone number of the person filling in the questionnaire (to be used only as a contact reference if follow-up is required).

_____ _____
NAME PHONE

Please make any additional comments:

_____
_____
_____
_____

Thank you for your cooperation.